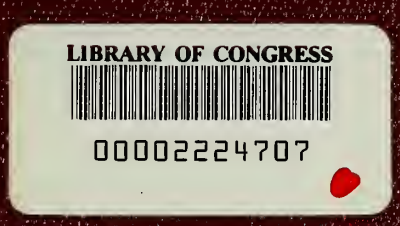

INSTRUCTIONS

IN

GYMNASTICS

CONTAINING

A FULL DESCRIPTION OF MORE THAN EIGHT HUNDRED EXERCISES, AND ILLUSTRATED BY FIVE HUNDRED ENGRAVINGS.

BY

J. E. d'Alfonce

Late Professor in the Military School in St. Petersburgh, and in Paris.

NEW YORK

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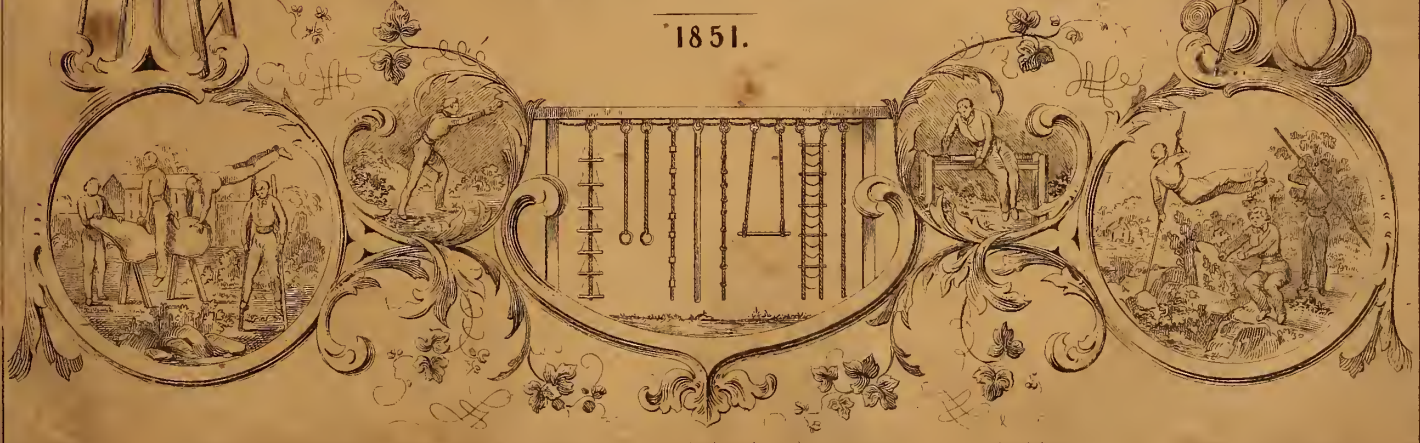

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PREFACE.

PREFACES are seldom read; but Parents and Teachers are requested, for the sake of their Children and Pupils, to read this preface, and to read it attentively.

It is, perhaps, indecorous on my part to have spoken as boldly as I have done on the merits of this work, but the interest of Parents, Teachers, and Pupils renders it necessary that I should say a few words; and I hope it will be admitted, that the knowledge acquired by many hundreds of my Pupils, the time I have devoted to the study and practice of Gymnastics, and the interest I feel in the subject, have really enabled me to render my book deserving of the praise with which I have presumed to introduce it.

Nearly all the prejudices which formerly existed against the practice of GYMNASTICS have disappeared; almost the only one now remaining is comprised in the question, "Of what use is it?" Since there are still some persons who ask this question, we propose answering it, presuming that doing so will be a proper manner of introducing this practical treatise on Gymnastics to the public.

If the object of practising Gymnastics were merely the attainment of that extraordinary skill and force which are, in reality, becoming only to performers in the circus, this question might well be asked, and it would be difficult to answer it satisfactorily in favor of our science. But this supposition is a great error; for, although it is true that the Acrobates are necessarily obliged to study Gymnastics, it does not follow that that study has not other and higher ends in view.

The healthy development of our physical organism cannot be completed without the aid of this science; this would be a great argument for it, but it is not that on which we mainly depend when advocating the *scientific* practice of Gymnastics.

No! its object is more serious, and still more useful; it is essentially moral, as well as physical. Hence its greatest merit, and hereon is grounded the best argument for it, viz.: that it contributes to develop our moral and intellectual faculties.

As long as human nature remains as God made it, a compound of two principles—body and soul—which react on each other during our existence, the training of these two principles will be a duty practised by every man who understands his nature and condition; by every man who knows himself!

Since the invention of gunpowder, physical education has been imprudently neglected; having adopted the idea, that a child with a gun can kill a Hercules, it has not been thought requisite to teach him anything else than to load his weapon as quickly as possible. This is a great error. The science of Gymnastics teaches us how to save our own or others' lives in great emergencies, to endure many privations, and to overcome many difficulties in our occupations and travels, during which so many obstacles arise between us and our objects. In crossing rivers, in escaping from fire, in exposure to hunger, thirst, heat, cold, and many other casualties, the difficulties would be, and often are, insurmountable to those who are not prepared beforehand by careful study and practice.

Gymnastics is to the body, what study is to the mind. We all admit, that the intelligence fortifies itself by application and exercise; this fact is the reason which induces us to give so much attention to the education of children. But we are not duly impressed with the knowledge of the advantages accruing to the mind from its connection with a healthy body in full vigor, the result of the energetic regularity of its functions; and through the want of that knowledge, we are not sufficiently anxious to secure a physical development as nearly perfect as our natural organization permits. In this respect we confide too much to the instinctive action of nature—especially during childhood—and we do not seem to perceive that the body would, by parity of reasoning, be as much advantaged by a regular, systematic, and wisely conducted education, as is the mind: or, that the want of such an education must be as detrimental to the one as to the other.

May tender mothers learn, and prudent fathers be convinced, that to neglect the physical education of their children, will be to render them imperfect, not only as children, but as men, and to prepare for them weakness, pain, and crime, each resulting from the other, and each reproducing the other, until mutually destroyed by a comparatively early death. Let all Parents be impressed with the truth of our assertion, that the education of the body should be directed with as much carefulness, and by as systematic a method, as that of the mind.

This education of the body is rendered more necessary by the daily progress of civilized life, and of the luxuries attendant on it, which naturally produce an undue softness and effemi-

nacy, tending to depreciate the physical, and, through them, the intellectual and moral qualities of the human race.

Gymnastics, well understood, is an essential part of a perfect education; therefore, we are not surprised that it has attracted the attention of the celebrated philosophers, Plato and Locke. Those great and wise men attached as much importance to the precepts of Hygieine as to those of Morality; by advocating those they considered that they benefited these. They knew that the physical organism will become vicious if permitted to usurp an unjust domination, if not, from youth, accustomed to absolute submission and obedience.

Gymnastics, although productive of much enjoyment to the young, is not an amusement. Ordinary games, with their irregular movements and want of continuity, cannot replace it; neither can well-disciplined and regulated Gymnastics be substituted for the active recreations of youth.

Supposing a youth, commencing his Gymnastic training, not to have any deformity and to be healthy; he may be, nevertheless, more or less strong, more or less adroit, more or less supple, better or worse proportioned. It is for Gymnastics to develop and perfect the corporeal nature of this youth, in the same manner as literary tuition should expand, direct, and strengthen his intellectual powers.

These are the especial objects of Gymnastics.

How are these objects to be attained? By regular exercises, which must be skillfully combined in such a manner that each part of the body receives an individual training,—the best adapted to the full development of the proportion, strength, and agility of the whole.

Gymnastics should be practised at least three times a week —daily, if possible.

We recommend to the principals of country schools, where a regular teacher cannot be had, to follow the course laid down and skillfully illustrated in this book, and not to permit any of the exercises to be passed over negligently.

Exercise is to the muscles, what study is to the intellect; each part of the human system is fatigued by application, but is, at the same time, better fortified and enlarged by it than it could be by any other means.

It should be well understood, that the exercises must be proportionate to the strength, age, structure, and constitution of each pupil. One youth has the muscles of his arms very weak; in another the same deficiency is in the legs: the chest of one is vigorous; that of another is so narrow that he cannot breathe with sufficient freedom. It is a duty of the Parents and the principal Teachers, guided by medical experience, to decide on the choice and duration of the exercises, according to the several temperaments of the Pupils.

The appetite is the most simple and infallible sign of the quantity and kind of exercise adapted to each Pupil: with a little attention the Parents cannot mistake its warnings. If, without any other cause but his Gymnastics, the Pupil eat less, the cause is that he exercises too much. On first entering the Gymnasium the appetite is strongly excited; in the course of some time that excitement ceases spontaneously. But the appetite should remain good, without being immoderate, as during the first days.

The most proper time for Gymnastic exercises is the morning, the forenoon, or the early part of the evening. We particularly recommend that the Pupils be never allowed to practise immediately after meals.

Some of these exercises are not adapted to the female sex; they do not coincide with the modesty and reserve which so well become them: the judgment and good taste of Mothers will readily make a proper choice, and the Teachers will be careful to modify the exercises chosen, so as to make them proper for their Pupils.

Grace is the principal charm of woman; it is natural to her, and the loss of that charming advantage ought not to be risked, by seeking to give her an undue, because an unnatural, strength. We go further, and advise the Teachers to modulate the commandment of the exercises for the young ladies; it is not well that, even in things so apparently indifferent, their delicacy of mind and ear should be disturbed by rude sensations.

In some respects, Gymnastics is more necessary for women than for men; the obstacles opposed to their physical development, by the customs of civilized and polite society, are more numerous and more injurious than those which affect men; and Gymnastics must assist the women to avoid the dreadful consequences these obstacles might occasion. It must not be forgotten that young women are to be mothers, and that they ought to be prepared for all the consequences of this destination, as much for their own sake as for that of their descendants. Every precaution must be taken in the choice of their Gymnastic exercises. The general rule is: Let the exercises be sufficient for a thorough and harmonious development of the physical organism of the Pupils, but do not let them be fatiguing, for fear of injuring that development.

Great care must be taken to prevent catching cold; in all seasons the violence of the exercises must be gradually diminished as they approach their end, and the Pupils who exercise out of doors (which we adopt as the best system) must enter the house and change their dress as soon as they have ceased exercising.

This work is published to facilitate the teaching of Gymnastics; it is essentially practical, and, as such, recommended not only to Parents and Teachers, but also to military and naval officers. It will be found of excellent utility by the useful body of firemen in this country, and in every country where the need of common instruction gathers together men or youths in large numbers; in all these instances the practice of Gymnastics will be of great advantage, and our book may find intelligent and interested readers.

The work is divided into distinct parts, according to the

nature of the exercises. In the first part are described the exercises which can be done without the aid of any instruments. An ordinary room will suffice for them. In the second part are described the exercises which require instruments, more or less expensive, for their performance. The third part is appropriated to exercises requiring a certain extent of space for their execution.

This work contains upwards of eight hundred exercises. The number could have been increased, *ad infinitum*, but those given are sufficient for the development of every part of the human system; and to prevent the tiresomeness of repetition, not only in one, but in many lessons, by the most advanced pupils, every intelligent person can vary and add to them at pleasure.

We do not intend to say, that all the lessons here given must be executed without exceptions; they may be chosen according to the taste and aptitude of the Pupils.

A Few Hints to Teachers of Gymnastics.

Insist upon great discipline and regularity; do not permit any noise or romping; have a perfect control over yourself; be cheerful, but firm in your commands; do not, under any circumstances, permit willfulness; always remember, that by adhering strictly to the rules, you will spare yourself the mortification, your Pupils the suffering, and their Parents the grief, which would result from accidents.

Petted, willful children are unfit for the Gymnasium; if you have any such, be watchful over them: the Pupils must be always attentive to your commands, and never quit the exercise you have assigned to them; they must listen attentively to your explanations; and the junior Pupils must observe the practice of the more expert.

The neglect of these rules is, without doubt, nearly the only cause of the accidents we sometimes have to deplore.

The attention of the Pupils to the success or failure of their companions, is productive of an emulation which should not be banished from the Gymnasium or the School; for, in each of them, it may be productive of beneficial effects, if limited by just bounds; but you must be careful that it be not carried too far, especially in wrestling, and with the dynamometer.

Singing is an essential part of Gymnastics, for it strengthens the lungs; let it be practised with the exercises of the first part, in running, and with all the exercises executed by several Pupils at the same time.

Military evolutions would form an excellent complement to Gymnastics. It would be an easily acquired and pleasing knowledge, and, being almost identical with Gymnastics, might easily be introduced into Schools—even primary Schools—and thus prepare our youth, imperceptibly, for the army. In some parts of Europe, particularly in Switzerland, this branch is extensively practised.

The engravings, which form part of this work, will be of great use. There is not any other book in the English language which is at all adapted to accomplish the object I have in view; but I am convinced that this book will entirely satisfy its readers, as well as myself.

Most of the Gymnasia in this country are very defective in their construction, for want of correct works, giving a detailed description of the sizes, forms, and uses of the instruments. In order to remedy this evil, I have also added to this work plans of the machines and instruments used in the Gymnasia of Europe; and seven years' practice with Pupils of all ages has enabled me to choose the most convenient; every instrument must be perfect in construction and materials; life and limb must not be endangered to save expense on this account.

No choice of words can so perfectly explain the movements and positions of the exercises, as well-executed figures; therefore, I have not spared either expense or labor on these engravings. I offer to American Pupils a book containing a perfect system of Gymnastic science—not amusement; and I shall be happy by having promoted this branch of education, and thereby facilitating the bringing up of well-trained, healthy youths, to have been able to repay a part of the debt which I owe to America for the freedom I enjoy, and for the hospitality and friendship I have received from her citizens.

The improvement of the physical strength will certainly increase the moral power; a strong man, by a bold action applied with judgment, may save hundreds, perhaps thousands, of lives; and in what country are there more frequent proofs of this fact, than in America? Its wide extent of sea-board; its mediterranean seas, its innumerable rivers and canals; its extensive railroads and traffic; and its difficult routes through forests, marshes, and the wilderness,—altogether present a mass of obstacles which only the most hardy can expect to surmount; an immense number are annually lost in attempting to overcome them. This is sufficient proof that a man must possess not only the will, but also the power necessary; and that power can only exist in a strong body improved by practice.

I do not know any country where Gymnastic training is more necessary than it is here; neither do I know any where this science is less cultivated. Here it ought to obtain not only individual encouragement, but the Governments of the States should advance and patronize it as efficiently as they protect the public education of the people. Let us have not only Common Schools, but let a Gymnasium be attached to each of them; it costs but little, and would produce immense advantages. It would prevent much of the sickness—such as colds, influenza, and consumption—now brought on by the children being confined in hot rooms during the winter; it would save them from the attacks of nervous debility, occasioned by want of exercise, or by what is still worse, unregulated exercise.

INSTRUCTIONS

IN

GYMNASTICS.

PART I.

PRELIMINARY EXERCISES WITHOUT MACHINERY OR INSTRUMENTS.

CHAPTER I.

ARTICLE I.—To turn the head to the right and to the left. (*Fig.* 1, *Pl. I.*)

The pupils are placed in a line at a distance of a step from each other, if exercised out of doors.

The Instructor commands—Attention.

1. *Turn the head to the right and to the left.* 2. One—two—3. Stop.

At the first command, turn the head very slowly to the right as far as possible.

At the second command, turn the head in the same manner to the left, and continue the movements.

At the command stop, the movements cease, and the head returns to a straight position.

The Instructor will pay attention that the pupils do not turn their shoulders at the same time as their heads.

ART. II.—To bend the head forward and backward. (*Fig.* 2, *a–b*, *Pl. I.*

The Instructor commands—Attention.

1. *Bend the head forward and backward.* 2. One—two—3. Stop.

At the command one, incline the head toward the chest, (*a.*)

At the command two, raise the head, and incline it moderately backward (*b*), and continue the movements. At the third command, the head is to return to an upright position.

ART. III.—To incline the head to the right and to the left. (*Fig.* 3, *Pl. I.*)

The Instructor commands—Attention.

1 *Incline the head to the right or to the left.* 2. One—two—3. Stop.

At the command one, incline the head slowly to the right.

At the command two, raise it, and incline it to the left.

At the third command, the head returns to an upright position.

These exercises should not be practised too long.

ART. IV.—To bend the body forward and backward. (*Fig.* 4, *a–b*, *Pl. I.*)

The Instructor commands—Attention.

1. *Bend the body forward and backward.* 2. One—two—3. Stop.

At the command one, incline the body forward, without bending the knees, so as to touch the ground with outstretched fingers, the palms turned inward, (*a.*)

After touching the ground, just before the feet, stand upright, throw the arms back, and spread them a little—bend the body slowly backward, (*b,*) then return to the first position.

Repeat the same until the command stop.

CHAPTER II.

Movements of the Arms.

ART. I.—Vertical movement of the arms, without bending them. (*Fig.* 5, *Pl. I.*)

The Instructor commands—Attention.

1. *Raise and let fall the arms without bending them.* 2. Ready—3. Stop.

At the second command, raise your arms quickly to a vertical position, without bending them, the hands closed, the nails inward, and in the same manner bring them to the legs, but not beyond them.

Continue the same until the command stop.

This exercise should be practised with a song.

ART. II.—Vertical flexible movement of the arms. (*Fig.* 6, *Pl. I.*)

The Instructor commands—Attention.

1. *Raise and drop the arms with flexion.* 2. Ready—3. Stop.

At the second command, turn the upper part of the hands forward, close them, and raise them nearly to the arm-pits, the elbows being moved from the body; then raise the arms as strongly and quickly as possible, above the head in a slanting position, the fingers facing each other; after that, lower the hands to the shoulders, the elbows being outward, and by an inward rotary movement, executed energetically, place them in the natural position.

Continue the same movements until the command stop.

This exercise should be practised with a song.

ART. III.—Rotary movement of the arms. (*Fig.* 7, *Pl. I.*)

The pupils are placed at the distance of three steps from each other.

The Instructor commands—Attention.

1. *Rotary movement of the arms.* 2. Ready—3. Stop.

At the word ready, make a blow forward with the right arm, the hand closed, then describe a circle by a downward or upward rotation, the fist passing close to the leg, and continue until the command stop.

After this, execute the same movement with the left arm, and then with both arms simultaneously.

This exercise is executed with different degrees of velocity.

ART. IV.—Horizontal movement of the arms. (*Fig.* 8, *a–b*, *Pl. I.*)

The Instructor commands—Attention.

1. *Horizontal movement of the* arms. 2. Ready—3. Stop.

At the first command, stretch the arms parallelly forward, the hands closed, the nails inward.

At the second, throw the elbows back, the arms touching the body, (*a*,) then stretch them again forward, (*b*,) and repeat the movements until the command stop.

This exercise should be executed with a song.

ART. V.—Right and left, horizontal and vertical movement of the arms. (*Fig.* 9, *a–b*, *Pl. I.*)

The pupils are at a distance of three steps from each other.

The Instructor commands—Attention.

1. *Extend the arms horizontally and vertically.* 2. Ready—3. Stop.

At the first command, extend simultaneously the arms sideways, the hands open and turned toward the ground, the fingers straight, and touching each other, (*a*.)

At the second, raise the arms vertically above the head, the hands touching each other, the thumbs crossed, (*b*,) in this position, bend the hands often without allowing the thumbs to separate. Return to the first position, by separating the thumbs, and repeat the movement until the command stop.

CHAPTER III.

Movements of the Legs.

ART. I.—Bending the legs. (*Fig.* 10, *Pl. I.*)

The Instructor commands—Attention.

1. *Bend the legs.* } Slow time.
2. *March.* } Quick time. Double quick time.
3. Stop.

At the command march, bend the left leg backward as high as possible, keeping the thigh and body straight; put the foot on the ground again, do the same with the other leg, and continue alternately until the command stop.

Notice.—Slow time is seventy-six movements per minute; quick time, one hundred and twenty; and double quick time, two hundred.

ART. II.—Bending of thighs and legs. (*Fig.* 11, *Pl. I.*)

The Instructor commands—Attention.

1. *Bend the thighs and legs.*
2. March, } Slow time.
3. Stop. } Quick time. Double quick time.

On the word march, raise the left thigh to a horizontal position, the legs hanging naturally, the toes pointing to the ground, and turned a little outward; then place the foot on the ground; commence the same movement with the right leg, and repeat the movements until the command stop.

This and the preceding exercise are executed without changing the position of either head or body.

In slow and quick time, the whole foot touches the ground; but in double quick time, these movements are executed by continual jumping on the toes.

Both exercises can be executed with the hands on the ancles. The Instructor in that case commands—Attention.

1. *The hands on the ancles.* 2. Bend the legs, &c.—3. March.

At the first command, put the hands on the ancles, the fingers straight and forward, the thumbs behind.

These exercises should be executed with a song.

ART. III.—Bending upon the haunches. (*Fig.* 12, *Pl. I.*)

The Instructor commands—Attention.

1. *Bend upon the haunches.* 2. Ready—3. Stop.

At the command ready, lower slowly the thighs, closely pressing on the calves, the arms hanging naturally; all the weight of the body resting on the toes; then rise gradually, with the body straight, and repeat the same movement until the command stop.

This exercise should be executed with a song. I particularly recommend this kind of exercise to the pupils.

ART. IV.—To run in a gymnastic chain. (*Mach. No.* 2, *Pl. I.*)

The pupils are placed in a gymnastic chain, at the distance of three steps from each other.

The Instructor commands—ATTENTION.

1. *Squad forward.* 2. QUICK TIME, &c.—3. MARCH—4. HALT.

At the first command, put the whole weight of the body on the right foot.

At the command MARCH, begin with a natural impulse by the left foot, permitting the arms to take their natural motion.

The first pupil, who must be well drilled, or a monitor, runs all the turns of the chain without stopping; the rest follow, and preserve the same distance from each other.

When the pupils meet each other at the intersection of the circles, one of the parties shortens or lengthens the steps, to avoid running against each other.

The Instructor takes the most convenient place, and stops the squad when he judges proper.

The velocity of double quick time is two hundred steps per minute.

CHAPTER IV.

Equilibrium.

ART. I.—TO STAND UPON ONE LEG, THE OTHER BEING BENT FORWARD. (*Fig.* 13, *Pl. I.*)

The Instructor commands—ATTENTION.

1. *Stand upon one foot, the other bent forward.* 2. READY—3. STAND AT EASE.

At the second command, put the whole weight of the body upon the right foot.

At the third command, raise the left knee as high as possible; seize it with both hands, the fingers grasping the middle of the leg, press it lightly to the thigh, and the thigh to the abdomen, the foot hanging naturally, the body straight; remain in that position until the third command, after which stand at ease.

The equilibrium upon the left foot is executed in the same manner.

ART. II.—TO STAND UPON ONE LEG, THE OTHER BEING BENT BACKWARD. (*Fig.* 14, *Pl. I.*)

The Instructor commands—ATTENTION.

1. *Stand upon the right leg, bend the left backward.* 2. READY—3. REST.

At the second command, put the whole weight of the body upon the right foot.

At the third, bend the left leg backward; seize it at the ancle with the left hand, the right arm stretched upward, with the hand closed, and the nails inward. Remain in that position until the fourth command; then stand at ease.

The equilibrium on the left leg will be practised in the same manner.

ART. III.—TO FALL ON THE KNEES, AND RISE AGAIN. (*Fig.* 15, *Pl. I.*)

The Instructor commands—ATTENTION.

1. *Fall on the knees.* 2. RISE UP.

At the first command, bend the knees to the ground, the thighs pressed together and touching the heels, the toes making a right angle with the ground, the arms hanging naturally, the hands closed, the body erect.

At the third command, rise with a quick movement, stretching the arms above the head, with closed hands, to the first position.

ART. IV.—TO BEND THE BODY FORWARD UPON ONE FOOT. (*Fig.* 16, *Pl. I.*)

The Instructor commands—ATTENTION.

1 *Equilibrium upon the right foot, the body bent forward.* 2. READY—3. REST.

At the first command, put the whole weight of the body upon the right leg.

At the second, bend the body forward, the left arm extended, the fist parallel with the shoulder, the right foot bent a little, the left arm and foot stretched out backward, the hand closed, nails outward, the toes pointed to the ground. Remain in that position until the third command; then stand at ease.

The equilibrium upon the left foot is similar.

The instructor may direct the pupils to hop forward and backward in that position.

ART. V.—TO BEND BACKWARD UPON ONE FOOT. (*Fig.* 17, *Pl. I.*)

The Instructor commands—ATTENTION.

1. *The equilibrium upon the right foot, the body bent backward.* 2. READY—3. REST.

At the first command, put the whole weight of the body upon the right foot.

At the second, bend the body backward to the utmost, at the same time bending the right leg, the left arm and leg extended forward, the hands closed, nails inward, the right arm hanging naturally. Remain in that position until the third command.

The exercise upon the left foot is similar.

ART. VI.—TO LEAN THE BODY TO THE RIGHT OR LEFT, UPON ONE FOOT. (*Fig.* 18, *Pl. I.*)

The Instructor commands—ATTENTION.

1. *Equilibrium upon the right foot, the body leaning to the right.* 2. READY—3. REST.

At the first command, put the whole weight of the body upon the right foot.

At the second command, incline the body as much as possible to the right, the right arm hanging naturally, the left arm and leg extended, and raised to the left; hand closed, the nails outward. Remain in that position until the third command.

The exercise upon the left foot is similar.

CHAPTER V.

Elementary Development of the Strength of the Muscles—Movement with the Arms.

ART. 1.—STRIKING THE CHEST WITH THE FIST. (*Fig.* 19, *Pl. I.*)

The Instructor commands—ATTENTION.

1. *Strike the chest.* 2. READY—3. STOP.

At the second command, strike the chest above the left nipple, with the right fist, the nails inward, the elbow near the body. Drop the right arm to its natural position, and commence the same with the left fist, and so changing, continue until the command STOP.

This exercise can be practised with a song.

ART. II.—TO STRIKE THE ARMS FORWARD ALTERNATELY. (*Fig.* 20, *Pl. I.*)

The Instructor commands—ATTENTION.

1. *Strike the arms forward alternately.* 2. READY—3. STOP.

At the first command, put the fists on the chest, the elbows back.

At the second, throw the right fist forward, stretching the right arm quickly with a jerk to its full length, at the same time putting forward the right shoulder.

The second movement consists in drawing the right arm as quickly back; continuing the same with the left, and so on, until the command STOP.

The same exercise can be executed with both arms at the same time.

I particularly recommend this exercise to the pupils.

ART. III.—HOLDING BALLS IN THE HANDS. (*Fig.* 21, *Pl. I.*)

The Instructor commands—ATTENTION.

1. *Hold the ball in the right hand, or the left hand, or both hands.* 2. READY—3. STOP.

At the first command, take the ball from the ground.

At the second, take the position indicated in the figure, turn the wrist out, hold the ball fast, and remain in that position as long as possible.

This exercise is executed in the same manner with the left hand.

Holding balls in each hand, can be executed by extending both arms forward or sideways, the feet remaining together.

At the third command, stand at ease.

In this exercise, emulation may be allowed.

ART. IV.—TO THROW BALLS. (*Individual exercises.*)—(*Fig.* 22, *a–b*, *Pl. I.*)

The Instructor commands—ATTENTION.

1. *Throw the ball forward.* 2. READY—3. ONE—TWO—THREE.

At the first command, take the ball in the right hand.

At the second command, put the right foot back about fourteen inches, and a little to the left, the knees slightly bent, the weight of the body resting upon both legs; the right arm stretched back, (*a.*)

At the command ONE, balance the right arm forward, and return to the first position.

At the command TWO, repeat the same movement.

At the command THREE, throw the ball as far as possible, (*b.*)

The pupils may exercise by throwing heavy and voluminous objects, the arm below the elbow placed vertically, the elbow close to the body.

This exercise with the left hand, is executed in the same manner.

This exercise can be executed also with two balls, one in each hand; in that case the pupil takes the position the most convenient to him.

The same exercise can be repeated by throwing bullets as high as possible, but no precise rules as to the position need to be observed.

Lastly, the pupil may be exercised by throwing alternately, stones, bricks, and small missiles, at a given object, the distance being regulated by the strength and skill of the pupil.

All these exercises ought to be practised one by one, and with care.

ART. V.—EXERCISES WITH CLUBS. (*Fig.* 23, *a–b*, *Pl. I.*)

The pupils are placed at the distance of three steps from each other, and every odd number four steps forward; the clubs are placed erect on the ground, about four inches from the feet.

1st *Exercise.* SHOULDER THE CLUBS.

The Instructor commands—ATTENTION.

1. *Shoulder the clubs to the right* (*or to the left.*) 2. ONE—3. TWO.

At the command ONE, the pupil seizes the club with the right hand, the palm turned out.

At the command TWO, he raises the club from the ground, by giving it a forward movement, and places it against the right shoulder, so that the big end touches the upper part of the arm, the elbow close to the body, the left hand hanging naturally, (*b.*)

This exercise is executed in the same manner with the left hand.

If the pupils are exercised with two clubs, they execute these movements simultaneously, or alternately, with each hand.

2nd *Exercise.* TO PUT THE CLUB BEHIND. (*Fig.* 24, *Pl. I.*)

The Instructor commands—ATTENTION.

1. *Put the club behind.* 2. ONE—3. TWO.

At the command ONE, the pupil advances a little the acting shoulder, slips the club horizontally upon the shoulder, and throws it backward perpendicularly.

At the command TWO, he replaces the club in the first position, and repeats this exercise many times with the right hand before commencing with the left.

Then he may exercise with both hands and two clubs.

3rd *Exercise.* TO THROW THE CLUB BACK. (*Fig.* 25, *Pl. I.*)

The Instructor commands—ATTENTION.

1. *Throw the club back.* 2. ONE—3. TWO.

At the command ONE, the preceding rules are observed; only, instead of slipping the club slowly, the pupil passes it quickly over his shoulder, and lets it hang by his side.

At the command TWO, the elbow is brought close to the body, and the former position retaken.

This exercise is executed alternately with the right and the left hand, and then with both hands, if the pupil is exercising with two clubs.

4th *Exercise.* TO HOLD THE CLUB FORWARD. (*Fig.* 26, *Pl. I.*)

The Instructor commands—ATTENTION.

1. *Hold the club forward.* 2. ONE—3. TWO.

At the command ONE, the pupil puts the club quickly forward, the arm extended, the nails inward.

At the command TWO, he turns the wrist, the nails downward; opening the fingers slowly, he lets the club descend, and by a movement given to it, describes a half-circle, and brings it to the shoulder in the first position.

This exercise is executed with the right and the left hand singly, then with both hands alternately; and at last with both hands simultaneously; if the pupils are armed with two clubs.

5th *Exercise.* To Hold the club sideways to the right. (*Fig.* 27, *Pl. I.*)

The Instructor commands—Attention.

1. *Hold the club sideways to the right.* 2. One—3. Two—4. Three.

At the command one, the pupil stretches the right hand, with the club forward, in a horizontal position, the nails outward.

At the command two, he describes three-quarters of a circle with the club, draws the elbow to the body, the hand on a line with and near to the right shoulder, the wrist turned in, and the club in a vertical position.

At the command three, the pupil lowers the club to the shoulder.

This exercise is executed in the same manner with the left hand.

6th *Exercise.* To hold the club inside, to the left.

The Instructor commands—Attention.

1. *Hold the club inside, to the left.* 2. One—3. Two—4. Three—5. Four.

At the command one, the pupil passes his club quickly to the left side in a horizontal position, the arm close to the body.

At the command two, he describes three-quarters of a circle to the right, bends the arm, and passes the club behind the head, the hand on a line with the ears.

At the command three, he lowers the club to the right, bringing his hand slowly to the right shoulder.

At the command four, he slides the club on the shoulder, and retakes the first position.

This exercise is executed in the same manner with the left hand.

7th *Exercise.* To raise the club forward horizontally above the head. (*Fig.* 28, *Pl. II.*)

The Instructor commands—Attention.

1. *Raise the club forward horizontally above the head.* 2. One—3. Two—4. Three.

At the command one, the pupil raises the club quickly, horizontally before the body, by stretching the arm forward, the nails inside.

At the command two, he turns the wrist, the nails outside, stretches the arm, directing the club to the left, and carries it horizontally above the head, bending the arm.

At the command three, he puts the club in the first position, the hand touching the shoulder.

This exercise is executed with the right and left hand alternately.

8th *Exercise.* To raise the club vertically, and pass it behind the head. (*Fig.* 29, *Pl. II.*)

The Instructor commands—Attention.

1. *Pass the club behind the head.* 2. One—3. Two—4. Three.

At the command one, the pupil holds the arm and the club in a vertical position.

At the command two, he directs the club to the left, by bending the elbow.

At the command three, he passes the club behind his head, and then retakes the first position, the hand touching the body.

This exercise is executed with the right and left hand alternately.

9th *Exercise.* To pass the club round the body. (*Fig.* 30, *a–b*, *Pl. II.*)

The Instructor commands—Attention.

1. *Pass the club round the body.* 2. One—3. Two—4. Three.

At the command one, the pupil reverses the club, placing the big end downward, and lets it hang naturally.

At the command two, he carries the club to his left, raising his hand gradually, (*a.*)

At the command three, he turns the hand with the nails outward, carries the club to the right, in the position of the first movement, turns the hand again with the nails inward. He repeats this many times.

This exercise is executed with the right and left hand alternately.

10th *Exercise.* To pass the club round to the right, or to the left.

The Instructor commands—Attention.

1. *Pass the club round to the left.* 2. One—3. Two.

At the command one, the pupil carries the club quickly to the right, in a horizontal position, the right arm extended, the nails forward.

At the command two, he describes a whole circle with the arm close to the body, and returns to the first position. He repeats this many times.

When exercising with the left hand, he passes the club to the right.

11th *Exercise.* To put the club on the ground.

The Instructor commands—Attention.

1. *Put the club on the ground.*

At this command, the pupil inclines the big end to the ground, bends slightly the upper part of the body, places the club about four inches before the feet, and stands at ease.

12th *Exercise.* To carry the clubs at arms' length.

The merit of this exercise rests in supporting the club as long as possible; it should be done with emulation.

OBSERVATIONS.

In all these exercises the Instructor causes the movements to be made at first slowly, so as to accustom the pupils to take the right positions.

In these exercises, also, the movements are separated, to render their parts more distinct; but when the pupils are well exercised, they should execute all the movements successively, until the command stop.

CHAPTER VI.

Movements of the Legs.

ART. I.—Simultaneous bending of the legs. (*Fig.* 31, *Pl. II.*)

This and the following exercises are executed with the hands placed upon the hips, or hanging; or else by giving a jerk with both hands, at the same time stretching them forward, closed, the nails inward.

The Instructor commands—Attention.

1. *Simultaneous bending of the legs.* 2. March—3. Stop.

At the command march, the pupil throws both legs backward, so as to touch the hind parts of the legs with the calves and heels, the body and the thighs straight; he falls on the toes in regaining the position.

This exercise is continued with the command ONE, repeated each time.

If it is executed with the arms raised, they should be held up at first.

In case it should be executed at random, it ceases at the command STOP.

ART. II.—SIMULTANEOUS BENDING OF THE HIPS AND KNEES. (*Fig.* 32, *Pl. II.*)

The Instructor commands—ATTENTION.

1. *Simultaneous bending of the hips and knees.* 2. MARCH—3. STOP.

At the first command the pupil draws himself up, by a strong movement, bends simultaneously his hips and knees as much as possible, falls upon his toes, and takes the first position.

This exercise continues and ceases as the last.

ART. III.—HOPPING ON THE RIGHT OR LEFT FOOT, OR JUMPING. (*Fig.* 33, *Pl. II.*)

The Instructor commands—ATTENTION.

1. *Hopping on the right or left foot, or jumping on both feet.* 2. MARCH—3. STOP.

At the first command, the pupil puts the whole weight of the body upon the acting leg, bending the other, the thigh held horizontally, the leg hanging naturally.

At the command MARCH, he carries himself forward, by hopping, and continues until the command STOP.

Jumping is executed, by throwing the whole weight of the body upon the toes.

With each movement, the pupil throws the arms forward, the hands closed, the nails inward.

ART. IV.—TO BEND THE INFERIOR LIMBS, AND TO MARCH IN THAT POSITION. (*Fig.* 34, *Pl. II.*)

The Instructor commands—ATTENTION.

1 *Bend the inferior limbs.* 2. FORWARD—3. MARCH—4. STOP.

At the first command, the pupil bends the inferior limbs, as explained, (*Fig.* 12, *Pl. I,*) and throws the weight of the body on the right foot.

At the command MARCH, he carries the left leg forward, placing the foot on the ground; he does the same with the right leg, and so continues until the command STOP.

After that command, he rises up, and stands at ease.

If the gymnastic establishment possesses stirrup bullets, the pupils hop on each foot alternately, carrying the bullet on the extremity of the other foot.

Pupils may be also exercised by marching upon the toes and heels; by ascending or descending declivities, stairs, &c.

CHAPTER VII.

Wrestling.

PRELIMINARY POSITIONS.

The pupils being numbered, and placed at intervals of two steps, the Instructor commands—ATTENTION.

1. *The odd numbers raise the left arms.* 2. TO THE LEFT—3. MARCH—4. READY.

At the first command, the odd numbers raise the arms quickly to a horizontal position.

At the command MARCH, the odd numbers step with the left foot forward, and place themselves facing the even numbers to their left, at three feet distance.

At the command READY, the odd numbers drop their hands naturally.

If the Instructor wishes the pupils to return to the line, he commands:

1. *The odd numbers in line, left.* 2. MARCH.

In wrestling, the pupils do not cease until the command STOP, and should observe, that the object is not, in any case, to throw their antagonists down.

The teachers, as well as parents, will be careful in observing these rules.

ART. I.—TO WRESTLE WITH THE HANDS, THE FINGERS BEING INTERLOCKED. (*Fig.* 35, *Pl. II.*)

The Instructor commands—ATTENTION.

1. *Wrestle with the hands, the fingers being interlocked.* 2. READY—3. COMMENCE—4. STOP.

At the command—READY, the pupils put their left feet about fourteen inches forward, bend the left leg, and stretch the right to support the effort; throw the weight of the body forward, hold the head erect, raise the arms and hands on a line with the shoulders, the palms of the hands turned forward, and interlock their fingers with those of their antagonists, looking them in the face.

At the command COMMENCE, each pupil pushes energetically straight forward, his arms extended parallelly, and, squeezing his fingers forcibly, endeavors to move his antagonist backward.

At the command STOP, the efforts cease immediately, and each pupil stands at ease, facing his antagonist.

This rule is applicable to all wrestling.

ART. II.—WRESTLING WITH THE FINGERS BENT. (*Fig.* 36, *Pl. II.*)

The Instructor commands—ATTENTION.

1. *Wrestling with the fingers bent.* 2. READY—3. COMMENCE—4. STOP.

At the command READY, the pupils place themselves as indicated above, the odd numbers stretch their arms, the palms of the hands turned out, the fingers a little bent. The even numbers put their hands opposite, in the same manner; in that position each pupil hooks his fingers with those of his antagonist.

At the command COMMENCE, each pulls strongly, and tries to move his antagonist from his place.

ART. III.—STRUGGLE WITH THE HANDS INTERLACED. (*Fig.* 37, *Pl. II.*)

The Instructor commands—ATTENTION.

1. *Wrestle with the hands interlaced.* 2. READY—3. COMMENCE—4. STOP.

At the command READY, each pupil seizes his left wrist with his right hand, the thumbs downward, places himself in the manner described in the preceding wrestle, and seizes with his left hand the

right wrist of his antagonist, their hands being on a line with their shoulders, (*a*.)

At the third command, both pull or push gradually, or by jerks, to the right or left, forward or backward, up or down, each trying to displace his antagonist.

ART. IV.—To WRESTLE WITH THE SHOULDERS. (*Fig.* 38, *Pl. II.*)

The Instructor commands—ATTENTION.

1. *Wrestle with the shoulders.* 2. READY—3. COMMENCE—4. STOP.

At the command READY, each pupil places his legs, as explained above, extends his arms forward, lays his hands on the shoulders of his antagonist, the thumbs downward, his fingers over the shoulders, the right arm outside, the left inside.

At the third command, each pupil pushes his antagonist strongly, and tries to displace him from his position.

ART. V.—To PULL THE HANDLES STANDING. (*Fig.* 39, *Pl. II.*)

The pupils being placed opposite each other, as in the preceding wrestles, each odd number holds the handle with his left hand—the rope passing between the first and second fingers.

The Instructor commands—ATTENTION.

1. *Pull the handles.* 2. LEFT OR RIGHT SIDE FORWARD—3. READY—4. COMMENCE—5. STOP.

On the command READY, the pupils put their feet as indicated above, and stretch their left arms forward horizontally, the nails downward, the right arm hanging naturally, the hand closed, and about three inches from the hip; the antagonist seizes the handle with the left hand, the rope passing between the first and second fingers.

At the third command, each pupil pulls strongly, gradually, or by jerks, trying to displace his antagonist in a direct line, without changing his own position to the right or left.

Pulling with the right side forward, is executed in the same manner.

Pulling with both hands, is executed by seizing the handle so that the rope passes between them; in that case the pupils place their left feet forward.

The Instructor commands—ATTENTION.

1. *Pull with both hands.* 2. READY—3. COMMENCE—4. STOP.

The strongest of the pupils will execute the same exercise with two handles—one in each hand—and with two antagonists.

The pupils will bear in mind, not to let go the handle, without giving warning to their antagonists, and to practise these exercises in open ground; or, if in rooms, to put aside all the chairs, tables, &c.

ART. VI.—To PULL THE HANDLES, SEATED. (*Fig.* 41, *a–b*, *Pl. II.*)

The pupils being placed opposite each other, the Instructor commands—ATTENTION.

1. *Pull the handles seated.* 2. READY—3. ONE—TWO—THREE.

At the command READY, the pupils sit down, put their legs together, and extend their feet forward, so as to touch each other's soles; place the handle between them, lean backward, and place their hands on their knees, (*a*.)

At the command ONE, both pupils grasp the handle, near the ropes with both hands, without bending their knees.

At the command TWO, they commence pulling, without great effort.

At the command THREE, pronounced with energy, they pull strongly and try to raise their antagonists, (*b*.)

The Instructor recommends not to alter the position of the feet, not to bend sideward, and, above all, not to let go the handle when rising.

As soon as one of the pupils is raised, the struggle ceases; each stands at ease, and the successful one keeps the handle in the left hand.

The Instructor may try all those who are successful together, and if two should remain unconquered, he may measure their strength by the dynamometer, and take notes thereof.

ART. VII.—PUSHING WITH THE DOUBLE CRUTCHES. (*Fig.* 40, *Pl. II*; *Mach. No.* 6, *Pl. I.*)

The pupils are placed opposite each other, the odd numbers having the crutches in their right hands.

The Instructor commands—ATTENTION.

1. *Push with the double crutches.* 2. RIGHT SHOULDER FORWARD—3. READY—4. COMMENCE—5. STOP.

At the command READY, each pupil puts his right foot forward, leaning his body in that direction, bending the right knee a little; at the same time he applies the concave part of the instrument to his shoulder, keeps the stick in the right hand, the arm a little bent, the left arm hanging naturally.

At the fourth command, each pushes his antagonist strongly, and tries to force him from his position.

The struggle with the left shoulder is executed in the same manner.

CHAPTER VIII.

Exercises of Singing.

It is very advantageous to accompany most of the exercises and movements by the voice, and particularly,

1st. Those which ought to be executed together.

2nd. Those which are repetitions of the same movement—as bending, jumping, running, &c.

The exercise of the voice is, above all, an indispensable part of gymnastics; it has a salutary influence on the development of the chest. It is incontestable that it acts powerfully upon the morals of men, when it expresses elevated sentiments.

No rules of teaching it are prescribed: a sure and rapid method, one that can teach the pupils to read easy music in a month or two, is requisite.

PART II.

APPLICATION EXERCISES.

TO JUMP OVER DITCHES, RAVINES, ETC., OR TO TRAVERSE GROUND FULL OF NATURAL OBSTACLES.

CHAPTER I.

Jumping.

The exercises of this chapter ought to be executed with extreme prudence.

The Instructor takes care not to allow the emulation which animates the pupils, to degenerate into a spirit of rivalry, which will excite them to dangerous efforts.

In cold weather, he abstains from exeeuting jumps which require violent efforts, and he will always excuse the pupils who do not feel themselves disposed to execute them.

Neglect of the rules alone, may cause an accident.

The Instructor may gradually increase the dimensions of an obstacle to be jumped over, but must never force the best pupils to jump down more than twelve feet.

JUMPING WITHOUT INSTRUMENTS.

ART. I.—JUMPING WITH JOINED LEGS. (*Fig.* 42, *a–b*, *Pl. II.*)

1st *Exercise.* JUMPING FORWARD.

The Instructor commands—ATTENTION.

1st *Jumping forward.* 2. ONE—TWO—THREE.

At the first command, the pupil puts his feet together.

At the command ONE, he bends upon his haunches; raising his heels a little, and extending his arms backward, the hands closed, (*a*,) he stretches himself, the hands hanging naturally.

At the command TWO, he repeats the same movements.

At the command THREE, he repeats the two first movements, stretches the thighs quickly, throws the arms forward, jumps over the distance or obstacle, (*b*,) falls upon the toes, bends the body, and stands up.

2nd *Exercise.* JUMPING IN HEIGHT. (*Fig.* 43, *a–b*, *Pl. II.*)

The pupil standing before a table, a bench, or some other object, the Instructor commands—ATTENTION.

1. *Jumping in height.* 2. ONE—TWO—THREE.

At these commands the pupils execute the above rules, with the difference, that at the command THREE, they throw the arms up to aid the raising of the body, (*a*.)

If the table, bench, or other object, be so near as to prevent the bending forward of the legs, the pupil bends them backward, (*b*.)

3rd *Exercise.* SIMPLE JUMPING DOWNWARD. (*Fig.* 44, *a–b*, *Pl. II.*)

The pupil standing upon a wall, table, bench, or some other object, the Instructor commands—ATTENTION.

1. *Simple jumping downward, forward.* 2. ONE—TWO—THREE.

At the first command, the pupil joins his feet, and puts them a little over the edge of what he stands up on.

At the command ONE, he bends slowly the inferior limbs, throws the arms forward, and resumes the first position, (*a*.)

At the command TWO, he repeats the same.

At the command THREE, he repeats the two first movements, diminishes as much as possible the height of the body, leaves the elevation upon which he stands, extends the feet, raises the arms, (*b*,) falls upon the toes, draws himself upright, and resumes the natural position.

4th *Exercise.* JUMPING FORWARD AND DOWNWARD. (*Fig.* 45, *Pl. III.*)

The pupil, standing on a wall, table, or some other object, the Instructor commands—ATTENTION.

1. *Jumping forward and downward.* 2. ONE—TWO—THREE.

On these several commands the pupil executes what was explained in jumping forward, taking care always to extend the arms forward on commencing to jump, and to keep them above the head in descending.

5th *Exercise.* JUMPING FORWARD AND UPWARD. (*Fig.* 46, *Pl. II.*)

The Instructor places the pupil at some distance from the object, and commands—ATTENTION.

1. *Jump forward and upward.* 2. ONE—TWO—THREE.

This jump is executed as were the jumps upward, with this difference, that the arms should be extended forward and upward, measuring the force of the movement, according to the elevation to be attained.

6th *Exercise.* JUMPING UPWARD AND DOWNWARD. (*Fig.* 47, *Pl. II.*)

The Instructor places the pupil near the object, and commands—ATTENTION.

1. *Jumping upward and downward.* 2. ONE—TWO—THREE.

On these several commands, the pupil executes what was explained for jumping upward; but, instead of stopping on the object, he passes it, and, in descending, observes the rules for jumping downward.

7th *Exercise.* JUMPING UPWARD, FORWARD, AND DOWNWARD. (*Fig.* 48, *Pl. III.*)

The obstacles can be arranged in such a manner as to execute all these movements at once.

The Instructor commands—ATTENTION.

1. *Jump upward, forward, and downward.* 2. ONE—TWO—THREE.

This jump is executed, as explained in the jump forward and upward, but instead of stopping on the object, the pupil takes start enough to pass it, and executes what was explained in jumping forward and downward.

It is not necessary that the ground beyond the obstacle be level with the point of departure.

ART. II.—JUMPING SIDEWAYS. (*Fig.* 49, *a–b*, *Pl. III.*)

1st *Exercise.* The Instructor commands—ATTENTION.

1. *Jump sideways to the right.* 2. ONE—TWO—THREE.

At the first command, the pupil puts his feet together.

At the command ONE, he bends his knees a little, extending the arms to the left, (*a*,) and takes his former posture, the arms hanging naturally.

At the command TWO, he repeats the same movements.

At the command THREE, he recommences the same movements, with more energy, bends slightly the inferior limbs, jumps to the right as far as he can, and throwing quickly the arms in the same direction, falls upon the toes, (*b*,) and resumes his former posture.

Jumping to the left, is executed in the same manner.

2nd *Exercise.* JUMPING DOWNWARD TO THE RIGHT OR TO THE LEFT.

This jump is the same as the preceding, but executed from an elevated position; the pupil throws the arms to the right, when he begins his jump, and upward when he ends it.

ART. III.—JUMPING BACKWARD.

1st *Exercise.* The Instructor commands—ATTENTION. (*Fig.* 50, *a–b*, *Pl. III.*)

1. *Jump backward.* 2. ONE—TWO—THREE.

At the first command, the pupil puts his feet together.

At the command ONE, he bends his knees, throws his arms forward, (*a*,) and stands at ease, his arms falling naturally.

At the command TWO, he repeats the same.

At the command THREE, he bends his knees again, carries his arms forward, then extends his legs, and throws his arms back by quick and simultaneous movements, and jumps backward, (*b*.)

2nd *Exercise.* JUMPING DOWNWARD AND BACKWARD.

The pupil is placed upon a wall, table, or some other object.

This jump is executed like the preceding, with this difference, that the pupil gives only a little impulse backward, and raises his arms in descending.

3rd *Exercise.* JUMPING BACKWARD AND DOWNWARD.

This jump is executed like the preceding, but taking more start, so as to jump as far as possible.

4th *Exercise.* JUMP DOWN BACKWARD, BY RESTING THE HANDS ON THE OBJECT JUMPED FROM. (*Fig.* 51, *Pl. III.*)

The pupil standing upon a wall, platform, or some other object.

The Instructor commands—ATTENTION.

1. *Jump backward, by taking hold with the hands.* 2. ONE—TWO—THREE.

At the first command, the pupil looks at the place upon which he will fall, joins his feet, puts his heels beyond the edge of what he stands upon, the knees a little bent, the body forward; puts his hands outside the feet, and grasps the edge of the table or wall, the fingers above and the thumbs below.

At the command ONE, he raises his body a little, without lifting his hands, and supports the weight upon his toes.

At the command TWO, he recommences the same movement.

At the command THREE, he repeats again the two movements; then throws the legs back, stretching them out as well as the body; lets go the hands, falls on the ground, with the upper part of the body bent forward, and the hands above the head.

This jump is executed also to some distance, backward and downward, by throwing the feet and body backward almost horizontally.

CHAPTER II.

Jumping, by starting from a Distance.

(Pl. III., Fig. 52.)

The Instructor numbers his pupils, who are placed at a distance of twelve or fifteen steps from the object.

After the notice of the Instructor, the pupils start quickly, increasing the rapidity of their movement as they proceed. On arriving at the point, they press the ground with the foot, which is in advance, give a strong extension to it, throw themselves as far as possible, the body and legs bent, the hands closed, the arms extended parallelly, on a line with their shoulders; fall to the ground upon the toes; and remain in a bent position, the arms extended, the head straight.

2nd *Exercise.* JUMPING FORWARD AND DOWNWARD.

3rd *Exercise.* JUMPING FORWARD AND UPWARD.

4th *Exercise.* JUMPING FORWARD, UPWARD, AND DOWNWARD.

These different jumps, by starting from a distance, are executed in the same manner as the preceding jumps, observing always the rules for the arms indicated in the jumps with joined legs.

In the jumps upward, the higher the object is, the greater must be the distance of the starting-place.

Each pupil, after the exercise, returns to his place in front of the object, and waits for his turn, if he is to jump again.

To complete these exercises, the Instructor may dispose a piece of ground properly, for the application of all the rules, and place on it benches, tables, stones, hurdles, &c.

As a general principle, the pupils will observe, as they jump from any object not much elevated, to help themselves by placing their hands on the objects near to them, to diminish the shock.

CHAPTER III.

The unforeseen circumstances under which a leap is sometimes necessary, require quick decision; therefore, the pupils should know the following rules, to apply them spontaneously on such occasions:—

1. *To estimate rapidly, at a glance, the object, and also the ground before and behind.*

Examine the ground inside, to make sure of the starting-point; upon smooth ground the foot may slip, and soft ground is not a solid hold.

By inspection outside, we choose our falling place, and we foresee the difficulties which we may encounter.

A difference in level between the starting and falling points, modifies sensibly the distance of the leap.

2. *The respiration must be suspended during the leap, and the air with which the chest is filled, at commencing, ought to be expired when we fall on the ground.*

3. *In forward and downward leaps, throw the closed hands suddenly in the direction which the body is to take, in order to increase the impulse given by the legs.*

To render the utility of this rule more apparent, the pupils are sometimes exercised in leaping, holding in each hand a shell of three pounds, or a bullet of four. With this auxiliary the extent of the leap forward will be considerably increased.

4. *In leaps downward, raise the arms vertically when the body descends*, to preserve the balance, and bend without losing it.

5. *In jumps forward, incline the body forward*, that the legs may act obliquely; their impulse will be more efficient.

The rule, to precipitate the last movements in running before leaping, has for its principal advantage, to incline the body as much as possible.

6. *Fall upon the toes*, the legs joined, bending all the articulations of the body from head to foot, that the shock may not be transmitted to the head, until it is lessened by numerous divisions. The articulations of the legs concur powerfully to that result; and it would be dangerous to prevent their effect by falling upon the soles, still more so upon the heels.

7. *Prevent the sudden bending of the body; give to all its articulations a general, supple motion*, restoring each to a state of rest, in such a manner as to form a slight rebound.

8. *Arriving on the ground, abstain from making useless efforts to keep a straight and stiff position, which will prevent steadiness.*

CHAPTER IV.

Leaping with Poles.

(Mach., Pl. I., No. 10.)

The pupils are exercised successively with poles of different lengths, commencing with the shortest. The pupil, standing, puts the thick end of the pole to the toe of the right foot, and keeps it vertically, the right hand placed on a line with the eyes.

In marching, the pole is carried in the right hand, the thick end forward, and raised about four inches from the ground, the pole resting on the shoulder, the thin end inclined a little to the left.

To lay down the pole, the pupil puts forward the left foot and bends the knee with the left hand upon it.

PREPARATORY EXERCISES.

The exercises of this chapter are executed without command, and individually. The pupils are placed three steps from each other.

The Instructor commands—ATTENTION.

1. *Leaping with a pole.* 2. READY.

At the second command, the pupil holds the pole above the head, and slipping his right hand, the thumb upward, he seizes the pole with the left hand, about three feet from the right, the thumb downward, the nails outward, opens his legs, and carries the thick end of the pole about three feet forward.

After seizing the pole in the manner indicated, the pupil runs three or four steps forward, puts the thick end of the pole straight before him, takes a spring from the left foot, raises his body, supported on the hands, which must not slip, throws the legs to the right, goes over a certain space in an almost horizontal direction, turning to the right, facing to the left, and descends, bent; raises the lower end of the pole and stands up, takes the first position and recommences the exercise until the Instructor stops him.

This exercise is also executed by turning to the left; in that case the hands change their position.

When the length of the pole permits, (three or four yards,) this exercise can be executed in the following manner: The pupil places the pole in a horizontal position, the hands on a line with the elbows, which are separated about three feet from each other, the nails outward, and the extremities of the pole at the same distance from the hands.

On a signal given by the Instructor, the pupil takes his spring on the left foot, according to the rules explained above, takes a new start on the right foot, throwing the body to the left, the right hand placed below, and continues in this manner without interruption until the Instructor stops him.

These exercises must be repeated until the pupils follow the rules correctly.

1st *Exercise.* TO LEAP FORWARD. (*Fig.* 53, *Pl. III.*)

The pupil seizes the pole more or less high, according to the width of the obstacle which he has to surmount.

In leaping, he conforms to the rules given in the preparatory exercises, with the difference that he takes a bolder start, succeeded by a quicker and longer run.

In leaping over a ditch, the pupil places the lower end of the pole more or less far in the ditch, according to its width and depth, or the length of the pole.

2nd *Exercise.* LEAPING UPWARD AND FORWARD. (*Fig.* 54, *Pl. III.*)

The rules for leaping upward are the same as for leaping forward, with this difference, that the impulse given to the legs and arms is proportionate to the height of the obstacle. The pupil leaps over the obstacle, and bends in descending.

If the obstacle to leap over be elevated about five feet, the pupil will observe the following rule: Place the thick end of the pole at eighteen

inches from the object; this distance is increased according to the height of the object.

The Instructor first causes the pupils to leap over obstacles of about three feet, then he gradually increases the height.

The pole must remain in the hands as long as the object is not very elevated, say six feet; but above that height, observe as a rule, to let go the pole before touching the ground.

3rd *Exercise.* LEAPING FORWARD, UPWARD, AND DOWNWARD.

This leap is executed by the rules for leaping upward.

4th *Exercise.* LEAPING FORWARD DOWNWARD, FROM AN ELEVATED POSITION. (*Fig.* 55, *Pl. III.*)

The pupil is placed upon a wall, platform, jumping-table, or some other object.

The pupil fixes the lower end of the pole more or less in advance of him, according to the space which he intends to pass; seizes the pole with both hands as high as he can reach, balances his body twice or thrice forward and backward, leaning upon the pole without moving the feet, throws himself forward with the last movement, giving a strong impulse to the pole, revolves on the inferior end of it, and describes part of a circle, preserving the support of his hands, throws his feet forward, and descends to the ground as far as possible with the legs drawn upward. The body passes to the right or the left of the pole.

This exercise is executed also with two poles. The pupil holding a pole in each hand; the poles are fixed parallelly, at the distance of about two feet. This exercise is only practised from a position not very elevated.

CHAPTER V.

Exercises by Suspension.

(Mach., Pl. III., No. 29.)

The pupil is placed upon the bench, and ready to seize the bar near the supports.

1st *Exercise.* SUSPENSION WITH BOTH HANDS, OR ONE HAND. (*Fig.* 56, *Pl. III.*)

The Instructor commands—ATTENTION.

1. *Suspension on the bars with both hands.* 2. ONE—TWO—THREE—DOWN.

At the command ONE, the pupil raises the arms parallelly, opens the hands, the fingers stretched, the palms outward and near the bar.

At the command TWO, he seizes the bar with the hands, the thumbs under, the fingers joined above, and brings one foot forward.

Here I must give to the pupils this general warning: In many gymnastic establishments this rule of seizing the bars is totally neglected, and in some instances I have seen the sad results of allowing the pupils to practise gymnastics at random. I therefore warn the pupils, under any circumstances, not to neglect the rule of seizing the bar as described above, and illustrated in the plate. In any other position the hand may easily slip; in that case, he will undoubtedly strike the bar with his chest, or, what is worse, with his face. The thumb, being a powerful member of our body, must be applied according to its strength; but as many of the pupils take hold with the fingers only, the thumbs being over the bar, instead of under it, they of course lose the aid of this very powerful auxiliary; besides which, by grasping the bar with the fingers and thumb, it is securely encircled, and the hand does not risk slipping, when a little damp with sweat.

At the command THREE, the pupil leaves the bench without a jerk or swinging the body, the legs falling naturally, (*a.*)

At the command DOWN, he quits the bar, falls on the toes, the knees drawn up, and takes the first position. This command will be always employed by the Instructor if he wishes to stop the exercises of this chapter.

When the pupil is familiar with this exercise, the Instructor suppresses the command DOWN; the pupil remains suspended as long as he can, from three to five minutes at least.

After this exercise, the Instructor passes to the following, which are merely varieties of suspension.

1st. SUSPENSION BY THE RIGHT OR LEFT HAND. (*Fig.* 56, *b*, *Pl. III.*)

This attitude consists in supporting the body with one hand, the other hanging naturally.

2nd. SUSPENSION BY BOTH HANDS, ONE TURNED IN, THE OTHER OUT.

The pupil, in this case, places his hands one in, the other out, without turning the body.

3rd. SUSPENSION WITH CROSSED ARMS.

The pupil seizes the bar with both hands, crossing his arms, and tries to keep himself facing the Instructor, without turning the body.

4th. SUSPENSION WITH BOTH HANDS, THE ARMS STRETCHED OUT AS MUCH AS POSSIBLE.

The pupil seizes the bar, the arms stretched out as much as possible. In this exercise only, it is allowed to put the thumbs over the bar.

These various exercises are executed also with the palms turned toward the body.

All these attitudes are taken at the word READY, of the Instructor.

2nd *Exercise.* TO RAISE THE HEAD ABOVE THE BAR. (*Fig.* 57, *Pl. III.*)

The pupils being suspended by both hands, the Instructor commands—ATTENTION.

1. *Raise the head above the bar.* 2. ONE—TWO—3. STOP.

At the command ONE, the pupil makes an effort with the wrists, raises his body until the chin passes the bar, the legs hanging naturally.

At the command TWO, he takes the first position, and thus continuing alternately, until the command STOP.

This exercise is executed also with the hands turned toward the body.

3rd *Exercise.* SUSPENSION BY THE BEND OF THE ARMS. (*Fig.* 58, *Pl. III.*)

The pupil being suspended by the hands, the Instructor commands—ATTENTION.

1. *Suspension by the bend of the arms.* 2. READY.

At the command READY, the pupil raises the body by an effort of the wrists, and puts the fore-arms on the bar, the bend of the arms supporting the weight of the body.

This is also executed with one arm.

4th *Exercise.* SUSPENSION BY THE FEET AND HANDS. (*Fig.* 59, *Pl. III.*)

This and the following exercises are to be executed one at a time.

The Instructor commands—Attention.

1. *Suspension by the feet and hands.* 2. Ready—3. Down.

At the first command, the pupil turns to the right or left.

At the second command, he seizes the bar with both hands, and by an effort of the wrists raises the body, throws the legs on the bar, hooks on it with the heels, and remains in that position.

At the command down, he detaches the feet, stretches himself slowly, and descends with the knees drawn up, if the bar is very elevated.

On the isolated bars, drawing up of the knees is not necessary.

5th *Exercise.* Suspension by the bend of the arms and legs, (*Fig.* 60, *a–b*, *Pl. III.*)

The Instructor commands—Attention.

1. *Suspension by the bend of the right arm and left leg.* 2. Ready.

At the first command, he turns himself to the right or to the left.

At the second, he seizes the bar with both hands, raises the body by an effort of the wrists, throws the leg towards the bar, hooks with the left foot and right arm, (*a*,) and lets the left arm and right leg hang naturally.

This exercise is executed also by suspension, or by the bend of the left arm and of the right leg. It can also be executed by suspension by the bends of both limbs of each side alternately, (*b*.)

ART. II.—Different manners of taking rest upon the bars.

The exercises of this article are executed individually.

1st *Exercise.* Sitting astride the bar. (*Fig.* 62, *a.–b.*, *Pl. IV.*)

1st Time—*four movements.*

1st *Movement.* Seize the bar with both hands near to each other, and remain suspended, turned to the left.

2nd *Movement.* Raise the body by an effort of the wrists, throw the legs forward, hook with the left knee, the right hanging naturally.

3rd *Movement.* Put the right arm flat on the bar, then the left; the left elbow and the left knee close together, the head raised above the bar, (*a*.)

4th *Movement.* Give to the right leg a pendulum motion forward and backward; repeat this three times, increasing the motion each time, the body following the motion of the legs: with the third swing make effort with the arms, incline the head forward, redress the body to a nearly vertical position, the arms stretched out; rest on the bar turned to the right, (*b*,) the left thigh supporting the weight of the body on the bar. When this is done, descend, observing the rule for the leap downward. This is the general rule for all the exercises of this article.

Sitting on one leg is also executed in the following manner:

1st and 2nd *movements*, as in the preceding exercise.

3rd *Movement.* Place the right arm on the bar, and bring the left knee close to the body, let go the bar with the left hand, and seize it again close to the left knee on the other side of it.

2nd *Exercise.* To turn on the bar, and maintain the equilibrium on the stomach. (*Fig.* 61, *Pl. III.*)

1st Time—*three movements.*

1st *Movement.* Haug on the bar, face forward, the arms parallel to each other, the legs joined, as explained in Chap. V., Ex. I.

2nd *Movement.* Shorten the arms, to raise the head above the bar, throw the head back, giving, at the same time, a quick effort forward, the legs describing a part of a circle, the body always touching the bar until the stomach can rest upon it.

3rd *Movement.* Stretch out the body by straightening the arms, and keeping the equilibrium on the wrists, the body touching the bar in an almost vertical position.

This exercise is also executed by seizing the bar with the hands turned toward the body, (this is the easiest method,) but should only be practised on spars, or bars of large dimensions.

Descend by throwing the body over forward.

Seize the bar, the palms forward, the fingers above the bar, and the thumbs under it; bend the arms a little, rest your stomach against the bar, throw yourself over forward, head first, the arms stiff, the legs bent; finish by revolving slowly round the bar, stretch out the arms and legs, take the position of the first movement, and descend.

The strongest pupils can revolve twice or thrice without stopping.

3rd *Exercise.* To get on the bar by an effort of the arms. (*Fig.* 63, *Pl. IV.*)

1st Time—*three movements.*

1st *Movement.* Hang on the bar with both hands, face forward.

2nd *Movement.* Make an effort with the wrists to raise the body, and place the right fore-arm on the bar, the elbow a little back, the hand opposite the middle of the body; then place the left fore-arm in the same manner.

3rd *Movement.* Lean the head forward, raise the body by an effort of the fore-arms, and at the same time bend both legs to help the movement, stretch out the arm, preserve the equilibrium, the stomach touching the bar.

When the pupil is well exercised, these movements succeed each other rapidly; to this effect he places both fore-arms simultaneously on the bar, and executes the third movement, without stopping at the second.

4th *Exercise.* To get on the bar by an effort of the wrists. (*Fig.* 64, *Pl. IV.*)

1st Time—*four movements.*

1st *Movement.* Is like the first movement in the preceding exercise.

2nd *Movement.* Make an effort to raise the body by the wrists, put the right fore-arm vertically upon the bar, without taking hold of it, the elbow raised.

In the beginning the Instructor can help the pupil by supporting him a little by the belt.

3rd *Movement.* Raise in the same manner the left fore-arm, at the same time bearing the whole weight of the body on the right fore-arm.

4th *Movement.* Continue to raise the body on both arms, and gain a vertical position, the equilibrium being on the wrists.

When the pupils do these exercises with facility, they are taught to execute the last three movements in quick succession. In that case, they place both wrists on the bar simultaneously, making a vigorous effort, raise the body in the position, as explained in the fourth movement.

ART. III.—Suspension exercises, with the movements to the right and left, forward or backward.

1st *Exercise.* The pupil being in the position of a first Exercise, the Instructor commands—Attention.

1. *Lateral progression to the right* (*or left*). 2. One—two—3. Stop.

At the command ONE, the pupil slides the left hand to the right hand.

At the command TWO, he raises his right hand, and advances it about twelve inches to the right, and continues in this way until the command STOP.

This exercise is executed with the left hand in the same manner.

2nd *Exercise.* PROGRESSION TO THE RIGHT OR TO THE LEFT.

The pupil being in the position of the first Exercise, the Instructor commands—ATTENTION.

1. *Progression to the right or left.* 2. ONE—TWO—3. STOP.

At the command ONE, the pupil faces to the right, letting go the bar with the left hand, which he places about six inches beyond the right hand.

At the command TWO, he carries the right hand forward to an equal distance, and continues in this way until the command STOP.

The movements to the left are executed in the same manner.

The Instructor accustoms the pupils to move backward. He commands—ATTENTION—BACKWARD MARCH.

At the command MARCH, the pupil carries the hand which happens to be forward, as far as he can beyond the other, changes the other in its turn, and continues in this way until the command STOP.

3rd *Exercise.* PROGRESSION BY ARMS-LENGTHS. (*Fig.* 65, *Pl. IV.*)

To execute this exercise, the pupils are placed at some distance from each other, that they may have more liberty in their movements.

The pupils being suspended, the arms stretched out, the Instructor commands—ATTENTION.

1. *Progression by arms-lengths, to the right or left.* 2. ONE—TWO—3. STOP.

At the command ONE, the pupil, advancing the right shoulder a little, lets go the bar with the right hand, (*a*,) carries the body to the left, the legs joined and straight; the right hand describes a half-circle close to the thigh, and lays hold of the bar as far as possible from the left hand, (*b*,) taking care to slide the fingers from below, and not to advance the hand, so as to touch the bar with the palm.

At the command TWO, the pupil executes the same movements with the left hand, and continues in this way, until the command STOP.

The movement by arms-lengths, to the right, is executed in the same manner.

This is the most beneficial exercise on the bars, developing the strength and grace of the pupils.

The young ladies' health and muscular development may be greatly benefited, if they practise some gymnastical exercises with their brothers at home. I intend (at some future time) to write for their use, a complete system of physical female education.

CHAPTER VI.

Horizontal or Inclined Ropes.

ART. I.—PROGRESSION UPON THE INCLINED (OR HORIZONTAL) ROPE, BY THE AID OF HANDS AND FEET. (*Fig.* 66, *a–b*, *Pl. IV.*)

The pupil seizes the rope with both hands, and by an effort of the wrists, raises the body, leans the head back, twines the left (or right) calf round the rope, (*a*,) puts the left hand above the right, inclining the body to the right; twines at the same time the left calf over the rope, which he lets go with the right leg, puts the right hand above the left, inclining the body to the left; twines again the right calf round the rope, which he lets go with the left leg, and continues in this way.

The pupil descends upon the same system.

This exercise is also executed in the following manner:—

The pupil hooks the heels round the rope, and at the same time moves the right arm and right leg, and the left arm and left leg, putting the heels alternately one above the other, without swinging the body, (*b.*)

If the rope is horizontal, the pupil moves forward and backward on the same system.

To repose himself, the pupil hangs by one knee and one elbow, and maintains himself in that position.

OBSERVATIONS.

The Instructor may also order the execution of the two exercises of Chapter V., Art. 2, Figs. 61 & 62.

CHAPTER VII.

Horizontal Spars.

(Mach., Pl. IV., No. 29.)

ART. I.—PROGRESSION UPON A SPAR.

The spar is placed, at first, about three feet from the ground, and can be raised progressively.

1st *Exercise.* TO GO FORWARD ASTRIDE. (*Fig.* 67, *Pl. IV.*)

The pupil places himself astride the spar, puts his hands about six inches forward, the thumbs on the top of the spar, the fingers outward, raises the body, supporting himself on the hands, the thighs forward horizontally, the legs hanging naturally; goes forward without touching the spar with the thighs, and sits down, the thighs touching the wrists.

He continues in this manner.

This exercise, to be well executed, ought to be accompanied with singing.

2nd *Exercise.* TO GO BACKWARD ASTRIDE. (*Fig.* 68, *Pl. IV.*)

The pupil puts himself astride the spar, the hands near the thighs, the thumbs on the spar, the fingers outside; throws the outstretched legs first forward, then backward; and rising on the wrists, throws the body back about twelve inches from the hands, which he must immediately slide to the thighs.

He continues in the same manner.

This exercise, to be well executed, ought to be accompanied with singing.

3rd *Exercise.* TO MOVE SIDEWAYS, SEATED. (*Fig.* 69, *Pl. IV.*)

The pupil being seated on the spar, wishing to move to the left, puts his hands near the thighs, the fingers forward; puts the left hand about six inches to the left, raises the body, and approaches it near the left

hand; places the right hand near the right thigh, and continues in this manner.

To move to the right, he employs the inverse means.

4th *Exercise.* To raise upon the hands, and move sideways. (*Fig.* 70, *Pl. IV.*)

The pupil places his hands upon the spar, the fingers forward, raises himself upon the wrists, the thighs against the spar, the elbows close to the body, the legs hanging naturally, the heels touching. To move to the right, he places the right hand about six inches to the right, puts the right thigh against the right hand by swinging on the wrists, and approaches the left hand. He continues in this manner.

This exercise is likewise executed to the left.

5th *Exercise.* Being astride, to move forward or backward with the hands. (*Fig.* 71, *Pl. IV.*)

The pupil places the hands on the spar, the fingers out, the thumbs on the top; raises the body, the thighs horizontally, advances the right hand about three inches, then lets go with the left hand, puts it at the same distance, and continues in this way without touching the spar with the thighs.

This exercise backward, is executed on the same system.

6th *Exercise.* To walk forward erect. (*Fig.* 72, *Pl. IV.*)

Before exercising the pupil on the spar, the Instructor makes him take the following attitude:—

The right foot a little before the left, the right heel opposite the middle of the left foot, the arms extended on a line with the shoulders, the fore-arm bent easily, the elbows a little back, the hands almost closed, the wrists lightly rounded in; the arms in this position are ready to be thrown outward, or drawn inward, in order to facilitate the preservation of the equilibrium.

The pupil places himself erect on the spar, in the attitude described above; he advances the right leg without stiffness, the eyes fixed on the extremity of the spar.

The length of the steps is not determined; it is important not to make them too long, in order to preserve the equilibrium more easily.

The Instructor accustoms the pupil to walk slowly at first, and to quicken the step progressively.

This exercise, to be well executed, should be accompanied by singing.

7th *Exercise.* To walk backward erect.

The pupil walks backward erect, in the manner explained above, by redoubling his precaution.

8th *Exercise.* To turn round on the spar.

The pupil turns slowly, until he makes a full evolution.

9th *Exercise.* To walk erect, to stop, descend astride, and rise again. (*Fig.* 73, *Pl. IV.*)

The pupil walks on the spar, in the manner explained above, stops, places the foot, which happens to be behind, against the heel of that which is before, squats down, places the hands on the spar near the feet, the fingers outward, the thumbs holding to the spar; throws the weight of the body upon the wrists, leans the head slightly forward, slides the legs slowly and simultaneously on each side of the spar, and places himself astride.

To raise himself, the pupil places the hands upon the spar near the thighs, balances the legs backward twice, and by the last impulse of the legs, combined with an effort of the wrists, puts the feet on the spar as near to the hands as possible, and raises himself with precaution.

10th *Exercise.* Meeting and crossing of two pupils on the spar. (*Fig.* 74, *a–b–c*, *Pl. IV.*)

If two pupils, passing astride or erect on the spar, meet, they stop; one of them lies across the spar, the arms forward, the hands taking hold of the spar; the other raises himself, if he be not already erect, and passes over the first without touching him, (*a.*)

This exercise is executed in another way, if the pupils are erect, and if the spar is not elevated more than four feet.

The pupils put their right feet one against the other, the toes outward, the left feet remaining behind; they seize each other lightly on the arm and body, to give mutual support, turn on the right feet, the left changing their positions; they separate themselves, and follow their first directions, (*b–c.*)

11th *Exercise.* To walk sideways erect.

The pupil places himself erect and sideways on the spar, the heels joined, the toes a little apart, the arm in the position indicated to walk forward erect. (*Fig.* 72.)

In walking, the pupil puts the right foot to the right, then slides the left foot close to the right foot, and continues in this way.

The same movements are executed in walking to the left.

12th *Exercise.* To bend upon the inferior extremities, and walk in that position. (*Fig.* 75, *Pl. IV.*)

The pupil, standing on the spar, bends the thighs, knees, and ancles, bears the whole weight of the body upon the right leg; in rising the right heel and the left foot, leave the spar, the left leg falling naturally; carries the arms and upper part of the body forward, puts the left heel on the spar, the leg stretched out; then the weight of the body passes to the left foot, which is put flat. He repeats the same movement with the right foot, and continues in this way.

13th *Exercise.* To walk erect, and to simulate a fall. (*Fig.* 76, *a–b*, *Pl. IV.*)

The pupil walks a few steps, and, simulating a fall, seizes the spar, (*a,*) throws himself under it, by taking hold with the fore-arms, calves and heels, (*b.*)

ART. II.—Suspension on the spar with the progressive movement.

The spar is elevated about six feet from the ground.

1st *Exercise.* To move with the aid of hands and feet, being suspended on the spar.

The pupil, being suspended on the spar by the hands and feet, as explained above, moves forward or backward according to the rules explained in the Chapter on Inclined Ropes, with this difference, that he puts the hands flat on the spar.

2nd *Exercise.* To hang, face to the spar, and to move sideways.

The pupil faces the spar, suspends himself by the hands, the fingers

forward, and moves to the right or to the left, in the manner explained in the Article on Suspension Bars.

This exercise is executed also by jerks.

3rd *Exercise.* To hang on the spar by seizing it with one hand on each side, and to move forward or backward.

The pupil seizes the spar on each side, and moves forward or backward by placing the hands one before the other, as directed in the exercises on the Bar of Suspension.

This exercises is executed also by jerks.

ART. III.—Settling on the spar, etc.

These exercises are classified as the most important. The scaling will be incomplete, and without useful result, if it be not terminated by a settling.

The spar is raised about six feet from the ground. The Instructor causes the following exercises to be executed on the spar, which are already described in the Chapter on the Bars of Suspension.

1st. *Settling by the fore-arms.*

2nd. *Settling by swinging over.*

This exercise cannot be executed otherwise, than by passing the hand under the spar, and grasping it. (*Fig.* 77, *Pl. IV.*)

3rd. *Settling upon the leg.*

ART. IV.—To descend from the spar.

The spar is more or less lowered, according to the indication of the Instructor.

1st *Exercise.* Being astride, to pass the right foot over the spar, and drop down. (*Fig.* 78, *Pl. IV.*)

The pupil being astride, and commanded to descend to the left, places the hands on the spar, the fingers to the right, the little finger of the right hand touches the right thigh, the hands separated about four inches, raises the body, passes the right leg over the spar, the calf stretched out; turns to the right, brings the right foot to the left, and descends to the ground, holding on by the hands.

The descent to the right is executed by the inverse means.

If, in descending, the pupil would throw himself backward, he rests the stomach against the spar, puts his hands on it, the fingers forward, joins the feet, swings twice forward and backward, repeats the same movements with more energy, throws the lower limbs back, pushing the body strongly with the hands, and drops down according to the rules given above.

2nd *Exercise.* To jump forward or backward when erect on the spar.

The pupil conforms himself to the rules explained in the chapter on jumping

3rd *Exercise.* Being seated, to jump forward.

The pupil being seated on a spar, puts his hands on it, the fingers forward, and by an impulse of the arms and legs, throws himself forward, according to the rules given above.

4th *Exercise.* To drop down when suspended on the spar by the hands and feet.

When the pupil is hooked on the spar, by hands and feet, he lets go slowly with the legs, joins the feet, and drops to the ground, observing the rules for jumping downward.

CHAPTER VIII.

In the gymnasium, where the inclined spars can be fixed separately the inclination of the spar can be raised progressively, until the height is equal to half the base. For the small pupils, almost the same effect can be obtained on parallel spars. Let the thick end of the spar rest on the lowest hole, end the thin end on the highest; this being arranged, execute the following exercises:

1st. *To move forward and backward, to ascend and descend when astride.*

2nd. *To move forward and backward, to ascend and descend when standing.*

3rd. *To move sideways, to ascend and descend when seated.*

The pupils incline the upper part of the body toward the top of the spar, when they ascend or descend.

OBSERVATIONS.

The pupils, in walking with some burden, ought to dispose of it in such a manner as always to have one hand free.

If many pupils traverse the spar at once, they must be separated three feet from each other, and walk with redoubled precaution.

Gradually the centre support can be dispensed with, and the Instructor will accustom the pupils to practise walking on vibrating spars.

CHAPTER IX.

Oscillating Spars.

The exercises of this chapter are always executed individually.

The spar is about three feet from the ground.

The pupil places himself erect on the spar, and walks on it, according to the rules given. The Instructor then gives the spar an oscillating movement in length. The pupil must seize the moment when the spar comes back, and then walk forward with precipitated steps; he stops and maintains his equilibrium during the time that the spar goes away.

The pupil may pass also astride; in that case the Instructor gives to the spar the various movements of oscillation.

If the pupil loses his equilibrium, he turns under the spar, hooks with the feet, and moves forward and backward, according to the rules given.

CHAPTER X.

Walking upon Stones or Posts.

(Mach., Pl. III., No. 28.)

ART. I.—Walking upon stones.

To walk from one stone to another without touching the ground, and to put only one foot on each, the pupil applies the fore part of his feet upon that part of the stone which is the most convenient.

ART. II.—Walking upon posts.

In walking upon posts, the pupil takes the position described in walking on the spar.

1st *Exercise.* To walk upon posts of equal height and thickness, and equally distant from each other.

The pupil passes from one post to another, by placing the foot on the top of it.

2nd *Exercise.* To walk upon posts of equal height, but at unequal distances.

The pupil casts a glance on each post, successively, and regulates the impulse to be given to the body by the distances.

3rd *Exercise.* To walk upon posts of unequal height and thickness, standing in zigzag.

The pupil turns upon the right foot, to place the left upon the post to the right; turns upon the left foot, to place the right foot on the post to the left, and so on.

4th *Exercise.* Meeting of two pupils on posts. (*Fig.* 79, *Pl. IV.*)

When two pupils meet each other, they put the right feet upon the same post, the inside of the feet touching each other, the left feet behind; the pupils seize each other by the arms and body for mutual support, turn on the right feet, the left feet change posts. The pupils then separate, and each takes his first direction.

This exercise can be executed by revolving on the left feet in the inverse sense.

The Instructor recommends to the pupil, in case of losing his equilibrium, not to fall between the posts if he can avoid it.

CHAPTER XI.

Stilts.

(Mach., Pl. I., No. 11; Fig. 80, Pl. IV.)

The pupil seizes the stilts, one in each hand, passes them under the arm-pits, the lower end directed forward, the supports turned in, runs three or four steps, fixes the lower ends on the ground, throws himself to raise the body, puts the stilts upright, by placing the feet on the supporters, slides his hands to a level with the haunches, walks straight forward, by bending the hips and knees, the arms follow the movement, and he holds the supports well up to the feet.

The pupil walks backward in the same manner.

If it be necessary, the pupil can establish himself upon the stilts by the aid of a bench, table, or some other object.

CHAPTER XII.

Scaling of the Portico and its Rigging.

ART. I.—Wooden ladders. (*Mach., Pl. II., No.* 17.)

The Instructor, before admitting the pupils to this exercise, first has the sand raked round the ladders, and convinces himself that they are safely fixed at both ends. The exercises on the ladders should be commenced on those of which the steps are the nearest to each other.

The base of the inclination will be equal to at least one-fourth of the height, and at most, one-third; with a larger base the oscillation will be dangerous; with a smaller than one-fourth, the ladder may fall.

The exercises upon the ladder are executed without command.

DIFFERENT MANNERS OF CLIMBING.

1st *Exercise.* To climb with the feet and hands, the face towards the ladder. (*Fig.* 81, *a*, *Pl. V.*)

The pupil faces the ladder, seizes the step on the level of his shoulders puts, at the same time, his right foot on the first step, the knee outward, raises the left hand, carries the whole weight of the body on the sole of the right foot, raises the right hand and the left foot to place them a step higher, the weight of the body resting upon the left foot; and continues in that way.

This exercise can be executed by two pupils at once, each occupying half the ladder, and seizing with one hand the step, and with the other the side, the feet on the steps.

This exercise is also executed by acting with the hands and feet of the same side.

2nd *Exercise.* To climb the ladder with the hands and feet, by turning the back to the ladder. (*Fig.* 81, *b*, *Pl. V.*)

The pupil turns his back to the ladder, puts his right foot on the first step, the weight of the body on the middle of the sole, seizes at the same time the side on his right with the right hand, the fingers outward, the thumbs inward; he executes the same movements with the left extremities, putting the foot on the second step, and continues in that way.

3rd *Exercise.* To climb by the aid of the feet only.

The pupil faces the ladder, and ascends according to the rules given in the first exercise, with this difference only, that he keep his hands near the sides, in order to take hold of them if he loses the equilibrium.

4th *Exercise.* To climb by the sides with his hands only. (*Fig.* 82, *Pl. V.*)

The pupil faces the ladder, spreads his legs, seizes the sides with the hands, and raises the body by a combined effort of the muscles, climbing in this way, if possible, to the top of the ladder, keeping the legs outside.

DIFFERENT MANNERS OF DESCENDING.

1st *Exercise.* To descend by the aid of the hands and feet, facing the ladder.

To descend, the pupil moves alternately the right or left extremities, in the manner indicated in the first exercise.

This exercise is executed also by two pupils at once, according to the rules given for climbing

2nd *Exercise.* To descend by the aid of the feet and hands, the back turned to the ladder.

The rules for climbing are given in the second exercise.

3rd *Exercise.* To descend by slipping on the sides. (*Fig.* 83, *Pl. V.*)

The pupil grasps the sides of the ladder firmly on a line with the shoulders, the fore-arms close on the sides; stretches out his legs, and applies them also to the sides; raises the body a little, so as not to

touch the rounds, and glides gently to the ground ; where he arrives, bending forward.

This exercise may be as well executed by stretching the legs beyond the sides of the ladder.

ART. II.—To climb and descend on the back of the ladder.

DIFFERENT WAYS OF CLIMBING.

1st *Exercise.* To climb by the aid of the feet and hands. (*Fig.* 84, *Pl. V.*)

The pupil, standing behind the ladder, and facing it, seizes the highest round he can reach, the thumb under it, places one of his feet on the first round, and, by acting simultaneously with the right and left extremities, climbs to the top.

He may ascend also by moving at the same time the right arm and left foot, or the left arm and right foot.

This exercise is also executed by seizing the sides with the hands.

2nd *Exercise.* Climbing on the rounds, by placing one hand after another on the same round.

This and the following exercises are executed with the hands only.

The pupil faces the back of the ladder, seizes the highest round he can reach, the thumbs under it, makes an effort of the wrists, to raise the body as high as he can, puts the right hand on the next round above, the left arm remaining, the elbow close to the body ; then he seizes with the left hand the round already occupied with the right hand, and continues to climb in this way from one round to another, keeping the body straight, the feet close, and the toes pointing to the ground.

I have observed that many pupils kick with their feet when climbing the ladder, a very unnecessary and most fatiguing practice. The Instructor will always check the pupils who use that way of climbing, and the pupils themselves will abstain from a habit which is only a hindrance to graceful action.

3rd *Exercise.* To climb the ladder by putting the hands, one after another, on different rounds.

This exercise is executed as the preceding, with this difference, that the pupil puts his hands one after another upon different rounds.

When the pupils are well exercised, they pass over one round at each movement.

The same exercise, but much more difficult, is, to climb the ladder, the palms of the hands being turned toward the body.

4th *Exercise.* To climb the ladder by jerks.

The pupil, placed behind, and facing the ladder, seizes the highest round he can reach, by giving to the body a slight impulse, makes an effort with the wrists to raise the body, and by a jerking movement, throws himself from the round on which he is suspended to the one above. As soon as he has seized it, he draws his arms close to the body, and throws himself again a round higher, and continues in this way to a given height, by repeating these movements.

Young pupils must be very cautious in performing this exercise. I recommend the Instructor never to allow them to mount more than ten rounds.

No restraint need be laid on those gifted by nature with a strong muscular development, and who practice daily.

The Instructor stays close to the ladder, to be ready to give his assistance in case the hand or hands miss the round or side.

5th *Exercise.* Climbing by seizing a round with one hand, and one side with the other. (*Fig.* 85, *Pl. V.*)

The pupil faces the ladder behind, grasps the side with the right hand, and with the left, the round just below ; he climbs, by putting his right hand higher on the side, and seizing the following round with the left hand, keeping the body straight and the feet close together.

To climb on the left side, the pupil follows the same method.

6th *Exercise.* To climb on one side of the ladder.

The pupil faces the ladder behind, grasps one of the sides with both hands, and ascends by carrying one hand above the other.

7th *Exercise.* To climb on both sides. (*Fig.* 86, *Pl. V.*)

The pupil faces the ladder behind, seizes the sides, and by an effort of the wrists, slides alternately the hands on the sides, keeping the body straight, the legs hanging naturally.

8th *Exercise.* To climb on both sides by jerks.

This exercise is executed as the preceding, with this difference only, that with both hands he slides on the sides, then seizes them higher, according to the rules given in climbing the rounds by jerks.

9th *Exercise.* To climb by jerks, seizing the sides and the rounds.

The pupil, after seizing the rounds, makes an effort with the wrists to raise the body as high as he can, lets go the rounds, seizes the sides with a jerking movement, bends his arms again, then again seizes the rounds, and so on.

I repeat, that the young pupils should be very cautious in executing these nine exercises. It requires time and practice, and then again, practice and time.

DIFFERENT WAYS OF DESCENDING.

1st *Exercise.* To descend by the aid of the feet and hands.

To descend, the pupil moves simultaneously or alternately the right or left extremities, according to the rules given. (*Chap. I., Art. II., 1st Ex.*)

2nd *Exercise.* To descend by the rounds, by putting one hand after another upon the same round.

Observe the rules given. (*Art. II., 2nd Ex.*)

3rd *Exercise.* To descend by the rounds, by putting one hand after another on the different rounds.

Observe the rules given. (*Art. II., 3rd Ex.*)

4th *Exercise.* To descend the rounds by jerks.

Observe the rules given. (*Art. II., 4th Ex.*)

5th *Exercise.* To descend by grasping a round with ond hand, and the side with the other.

Observe the rules given. (*Art. II., 5th Ex.*)

6th *Exercise.* To descend by one side.

Observe the rules given. (*Art. II., 6th Ex.*)

7th *Exercise.* To descend by both sides.

Observe the rules given. (*Art. II., 7th Ex.*)

8th *Exercise.* To descend by both sides by jerks.

Observe the rules given. (*Art II., 8th Ex.*)

9th *Exercise.* To descend by jerks, grasping the sides and rounds one after the other.

Observe the rules given. (*Art. II., 9th Ex.*)

10th *Exercise.* To descend by letting himself drop down.

The pupil suspends himself on a round behind the ladder, the body straight, the feet joined, the toes pointing to the ground, lets go the round with both hands simultaneously, and drops down, conforming himself to the rules of jumping downward.

This exercise is generally executed from a height of six feet, by grown pupils.

ART. III.—To pass from the front to the back of the ladder, and the reverse. (*Fig.* 87, *Pl. V.*)

The pupil, after ascending the ladder by the front, grasps the right side of it with his left hand close above a round, puts his right foot outside of the ladder, inclines a little outward, seizes behind, with his right hand, the round above that near which his left hand is placed, passes the body behind the ladder, puts his feet upon a round, and, at the same time, seizes with the left hand the same round on which his right hand is placed.

To pass from behind, the pupil employs the same means.

CHAPTER XIII.

Spoked Poles.

(Mach., Pl. II., No. 16, *d.*)

These exercises are executed without command.

1st *Exercise.* To climb and to descend the spoked pole, by facing it. (*Fig.* 88, *a*, *Pl. V.*)

The pupil seizes the highest spoke he can reach, puts his foot upon the lowest spoke, and climbs from one to another.

He descends by the same means.

2nd *Exercise.* To climb and descend the spoked pole, by turning the back to it. (*Fig.* 88, *b*, *Pl. V.*)

The pupil turns his back to the pole, seizes the highest spoke he can reach, places his foot upon the first, stretches his legs to raise his body, lets go with his hands one after the other, to place them on the next spoke, and continues in this way.

To descend, the pupil stretches out his feet naturally, remains suspended a few seconds by the hands alone, places the feet upon the next spoke below, lets go with his hands one after the other, to place them on the next spoke, and continues in this way.

CHAPTER XIV.

Single and Compound Ropes.

(Mach., Pl. II., No. 16.)

1st *Exercise.* To climb and to descend on a rope ladder with the hands and feet. (*Fig.* 89, *Pl. V.*)

The pupil seizes the sides of the ladder above his head, puts his feet upon the first round, the knees outside the ladder, the weight of the body on the exterior parts of the soles, slides the left hand on the side of the ladder, and at the same time places his right foot a round higher, makes the same movement with the other extremities, and continues alternately in this way, observing to keep the body as close to the ladder as possible, and the head straight.

He descends by the same means.

2nd *Exercise.* To climb and to descend an inclined rope ladder.

The rope ladder is slightly inclined, well stretched, and fixed by the extremities.

The rules for climbing are as above.

3rd *Exercise.* To climb an inclined rope ladder from behind. (*Fig.* 90, *Pl. V.*)

The manner of climbing an inclined rope ladder from behind, varies according to its inclination.

Under 45 degrees, that is if the base is equal to the height, the pupil climbs by seizing the steps with his hands, and placing his hands as explained in the first exercise; if the inclination is more than 45 degrees, the pupil places his feet over the sides, and hooks himself with the heels, raises his body by an effort of the wrists, moving alternately the opposite extremities: the heels rest upon the sides, and as near as possible to the steps.

He descends by the same means.

This exercise may also be executed with the hands only, the legs hanging naturally.

4th *Exercise.* To advance on a rope ladder, stretched horizontally. (*Fig.* 91, *Pl. V.*)

The pupil lies flat on the ladder, seizes the sides as far as he can reach, puts the feet on the steps, the toes turned out, makes an effort with the wrists to draw his body along, and glides in this way to the extremity of the ladder.

5th *Exercise.* To go behind the ladder, by hooking with the hands and feet, or with the hands only. (*Fig.* 92, *Pl. V.*)

The pupil holds on to the ladder, as explained in the third exercise, and moves forward and backward, as explained in the same exercise.

This exercise is also executed with the hands only: in that case the feet hang naturally.

CHAPTER XV.

Amoros's Ladder.

(Mach., Pl. II., No. 16, *h.*)

To climb and to descend on Amoros's ladder. (*Fig.* 93, *a–b–c*, *Pl. V.*)

The pupil seizes the rope as high as possible, raises the body by an effort of the wrists, the legs stretched, the heels joined, the toes turned

out, (*a*,) puts the feet simultaneously on each side of the block, squeezes the rope with his feet, and lifts up his arms, to climb from one block to another.

He descends by the same system, seizing the rope on a level with his shoulders.

To repose himself, the pupil sits upon a block, and keeps his feet tight round the rope, (*b*.)

When the rope hangs against a wall, the pupil ascends by acting with the right and left extremities alternately, the toes touching the wall, the heels resting on a block, (*c*.)

This is a quick method of climbing, to a pupil who is well exercised.

By stretching the rope the exercise becomes easier.

CHAPTER XVI.

Knotted Ropes.

(Mach., Pl. II., No. 16, *k*.)

CLIMBING AND DESCENDING A KNOTTED ROPE. (*Fig.* 94, *Pl. V.*)

This exercise is executed according to the rules given in the first exercise of the preceding chapter.

It may also be executed with a rope in an inclined position: in that case the pupil keeps the body as close to the rope as possible.

CHAPTER XVII.

Smooth Ropes.

(Mach., Pl. II., No. 16, *ff*.)

1st *Exercise.* TO CLIMB A SMOOTH ROPE WITH THE AID OF THE HANDS AND FEET, AND TO DESCEND THE SAME. (*Fig.* 95, *a–b*, *Pl. V.*)

The pupil seizes the rope as high as he can reach, raises his body by an effort of his wrists, takes the rope between his legs, twists it completely round his right leg so as to touch the calf and pass over the foot; keeps the rope in this position by placing his left sole on the right instep, (*a*,) seizes the rope above, hand over hand, stretches the legs, raises his body again, at the same time sliding the rope on the right instep, presses the rope with the left foot, and continues to mount in that way.

If the rope hangs loose, the following rule ought to be observed, (*b*,)

The pupil puts his legs horizontally forward, instead of keeping them in a vertical position. The rope adheres better to the leg in a horizontal position, and enables the pupil to repose himself, and to climb higher up.

In slipping down, the pupil will observe the rules given in the first exercise, placing hand under hand, at the same time pressing the rope a little with his calf, to regulate the quickness of the movement.

2nd *Exercise.* TO CLIMB THE SMOOTH ROPE WITH THE HANDS ONLY, AND SLIP DOWN IT. (*Fig.* 96, *Pl. V.*)

The pupil seizes the rope as high as possible, makes an effort with the wrists, and raises himself by putting hand over hand, and keeping the rope between the legs.

He slips down according to the same rules.

3rd *Exercise.* TO CLIMB AND SLIP DOWN TWO ROPES WITH THE HANDS ONLY. (*Fig.* 97, *Pl. V.*)

The pupil seizes the ropes with both hands, and by an effort of the wrists raises himself, according to the rules explained above.

He descends in the same way.

This exercise is also executed by jerks.

4th *Exercise.* TO PLACE THE ROPE UNDER THE FOOT OR THIGH. (*Fig.* 98, *a–b*, *Pl. V.*)

The pupil, being suspended on the rope by both hands, drops the left hand and seizes the rope under the left thigh, raises it and brings it to the right hand, and then seizes the double of the rope with his left hand. He may acquire more stability by seizing the rope with the right hand below the left, and then he puts the weight of the body on the left thigh and rests himself, (*a*.)

This exercise is also executed in the following manner:

The pupil, instead of putting the rope under the left thigh, raises the left leg, puts the rope under the sole of that foot, then raises it with the left hand, stretches out the left leg, and finishes the exercise as explained above, bearing the whole weight of the body on the left foot, the legs straight and the body in a vertical position, (*b*.)

The pupil may take this position on the right thigh and foot.

To maintain himself as long as possible in that position, and to preserve the use of his hands, the pupil may put the loose end of the rope around his body, and fasten it tight. The two ropes may be fastened by a knot at their junction.

I especially recommend to the pupils the exercises in this chapter.

CHAPTER XVIII.

Stirrup Ropes, or Bois-Rozé's Ladder.

TO CLIMB BOIS-ROZE'S LADDER, AND TO DESCEND THF SAME. (*Fig.* 99, *a–b*, *Pl. V.*)

The pupil seizes the rope as high as he can reach, puts one foot on the nearest stirrup, raises the body by an effort of the wrists, stretches the calf, puts the other foot in the stirrup above, grasps the rope higher up with both hands, and continues in this way.

He descends by the same method.

In an emergency two stirrups may be sufficient. I give the following explanation for grown-up young men only.

One of the stirrups must be about three feet long, (*a*,) and the other of four feet four inches, (*b*;) they terminate above in an ear, in which the rope slips. (*Fig.* 99, *Pl. V.*)

The pupil seizes with the right hand the rope and the ear of the longest stirrup, and puts his right foot in it.

With his left hand he seizes the rope and the ear of the shortest stirrup, and puts his left foot in it.

He climbs by slipping the stirrups alternately on the rope. The pressure of the hands is sufficient to prevent the stirrups from slipping down.

The pupil descends by the inverse method.

CHAPTER XIX.

Poles.

(Mach., Pl. II., No. 16.)

1st *Exercise.* To climb up and descend the pole by the aid of the hands and feet. (*Fig.* 100, *a*, *Pl. V.*)

The pupil seizes the pole as high as he can, applies the right (or left) knee and instep against it, raises the body by an effort of the wrists, bends the haunches, squeezes the pole with his leg, puts his hands one above the other, and as high as possible, makes an effort with each alternately, and continues in that way.

To descend from the pole, the pupil presses a little with his feet, to prevent too rapid motion, and crosses the hands one on the other.

If the pole be oscillating, the pupil will be careful to maintain the head and body as close as possible to the pole, in order to lessen the effects of the oscillation.

2nd *Exercise.* To climb up and descend the pole with the hands only. (*Fig.* 100, *b*, *Pl. V.*)

The pupil goes hand over hand by making efforts with the wrists, the legs slightly bent, one on each side of the pole.

He descends according to the same rule.

He descends also without the aid of the hands, by pressing the pole a little with the legs to prevent too rapid motion, keeping the hands near the pole that he may seize it in case of need.

3rd *Exercise.* To climb by one pole, and descend by another.

The pupil climbs one of the poles, observing the rules given in the first exercise, seizes the other pole with both hands, makes an effort with his wrists, detaches his legs from the first pole, and takes the same position on the second, according to the rules explained above.

4th *Exercise.* To climb and descend on two poles. (*Fig* 101, *a*, *Pl. V.*)

The pupil stands between the two poles, seizes them as high as possible, and raises his body by an effort of the wrists, the left hand sustaining the weight of the body; makes an effort with the right hand, raises the left hand, and continues alternately in this way, the legs hanging naturally.

He descends by the inverse means.

5th. *Exercise.* To Climb and descend on two poles by jerks. (*Fig.* 101, *b*, *Pl. V.*)

This exercise is executed like the preceding, with the difference that the pupil lets go the pole with both hands at once, and quickly raises them higher up.

He descends by the inverse means.

For the execution of these two exercises, it is necessary that the poles should not be farther from each other than twenty inches for the grown pupils.

CHAPTER XX.

Inclined Poles.

The base of the inclination of the poles must be between one and two fifths of their length.

1st *Exercise.* To climb and descend under the inclined poles. (*Fig.* 102, *Pl. V.*)

This exercise is the same as if the poles were in a vertical position.

2nd *Exercise.* To climb and descend above the inclined poles. (*Fig.* 103, *Pl. V.*)

This exercise is the same as if the poles were in a vertical position, only the pupil takes care not to turn under them.

3rd *Exercise.* To climb above a pole inclined against a wall. (*Fig.* 104, *Pl. V.*)

The pupil puts one leg on each side of the pole, which he seizes on a line with his head; raises the body by an effort of the wrists, presses slightly his toes against the wall, puts the right hand higher up on the pole, and the right foot higher up on the wall; repeats the same movements with the left hand and foot, and continues in this way, the upper part of the body being kept close to the pole.

OBSERVATIONS.

It is only by the effort of the arms that the body must be raised; the feet touch the wall only to preserve equilibrium.

During the movements, the pole ought to be steadied by one or two pupils.

4th *Exercise.* To climb under the pole, and to get upon it. (*Fig.* 105, *a–b*, *Pl. VI.*)

If the pole be at such a distance from the wall that the pupil cannot reach the wall with his feet, he climbs as explained in the rule for climbing the vertical pole, *(a ;)* but when his head nearly touches the wall he turns; to do that, the pupil detaches his left foot, and puts it against the wall, turns his body to the right until he gets astride the pole by the help of his hands *(b,)* puts the right foot against the wall, and continues to climb according to the rules given.

5th *Exercise.* To climb on two poles. (*Fig.* 106, *Pl. VI.*)

The pupil faces the wall, places himself between the poles, seizes each with one hand, on a line with his head, the hands outward, the forearms on the poles, puts his bent legs on the poles, the knees out, the feet in, the insteps close to the poles. He climbs by an effort of the arms alternately. The limbs on the same side move together.

The pupils with their hands prevent the poles from being too far separated by their knees.

This exercise is also executed by placing the knees inside, and the feet outside, the poles. (*Fig.* 106.)

The poles are about eighteen inches apart.

CHAPTER XXI.

Amoros's Hooks.

(Mach., Pl. II., No. 21.)

To climb and descend Amoros's pole.

If the pole is hooked on a portico, the rules for climbing on it are the same as for a vertical pole.

If the pole is too short, the pupil takes a spring, seizes the ring with his right hand, and at the same time his right wrist with his left hand,

raises his body by an effort of the wrists, seizes quickly the pole with his left hand, and continues to place hand over hand. (*Fig.* 107.)

When the pupil is at a sufficient height, he continues to climb by the aid of his hands and feet, according to the rules given.

If the pole is hooked against a wall, the pupil conforms himself to the rules given in the third exercise, Chap. VIII. (*Fig.* 108, *Pl. VI.*)

The pupil can settle on the wall, or descend, according to the rules given.

OBSERVATIONS.

This exercise is one of the most important in gymnastics, and the greatest care must be observed in the execution of it.

The pupil will always observe to let the two hooks bite equally on the wall, and not to derange them by jerking movements in climbing.

If the pupils are not well exercised, the Instructor supports the lower end of the pole until all the pupils are settled on the wall.

If the poles to be practised with are too long, the Instructor lets the best pupil go first, at the same time supporting the pole. When the pupil is settled on the wall, he seizes the hooks and fixes them as securely as possible. The Instructor then permits several pupils to climb at once.

The first climber keeps the hooks steady with one hand, and with the other helps those of the pupils who find some difficulty in getting on the wall; to that effect he places the palm of his hand on the back of their heads, and draws them gently toward him.

If it be necessary, the Instructor may make use of the lengthening pole, or may fasten a rope to the ring.

CHAPTER XXII.

Exercises on the Portico.

(Mach., Pl. II., No. 16.)

ART. I.—To ascend the portico, and to descend from it.

After the pupils have learned to climb and descend the ladders, poles, ropes, &c., when isolated, they are exercised on the portico.

The pupils ascend the portico by the aid of the instruments, and establish themselves on the beam, either on their fore-arms, astride, or erect.

The pupils are placed in a line about thirty steps from the portico, and facing it, and at the distance of three steps from each other.

The Instructor indicates by their numbers those who ought to climb; each pupil seizes the instrument which is assigned to him, and climbs according to the rules laid down.

There are different means of climbing the portico.

1st. By wooden ladders.
2nd. By spoked poles.
3rd. By rope ladders.
4th. By fixed poles, oscillating poles, inclined poles, masts, the supports of portico, &c.
5th. By knotted ropes.
6th. By smooth ropes.
7th. By Bois-Rozé's ladders.
8th. By Amoros's ladders.
9th. By trapezium ropes.
10th. By the ropes with rings, &c.

ART. II.—To descend by means of an instrument.

The pupil, being astride the beam, puts his feet on one side, slips on his stomach, and supporting himself on the fore-arms, suspends himself on the portico, grasps one of the instruments, first with one hand, and then with the other, and descends according to the rules given.

ART. III.—To descend by the cross rope. (*Fig.* 109, *a–b–c–d*, *Pl. VI.*)

1st *Manner.* The pupil, being astride the beam, puts his feet on one side, suspends himself on the portico, the arms shortened, the legs stretched out and joined together, (*a*,) grasps the rope first with one hand and then with the other, (*b*,) stretches his arms, and drops to the ground, (*c*.)

A well-exercised pupil can let go the beam with both hands at once, and seize the rope dexterously as he descends.

2nd *Manner.* The pupil puts himself across the portico, or lies down on the platform, seizes with his hands the cross rope, the fingers under, the palms forward, bends the upper part of the body, puts his legs over, turns over his body, holds all his weight on his wrists, stretches his legs slowly, then his arms, lets go the rope, and drops down, (*d*.)

ART. IV.—Being seated on the beam, to jump down.

The pupil, being seated on the portico, puts his hands on it, the thumbs close to the thighs, and by an impulse of his legs and arms throws himself forward, according to the rules laid down.

ART. V.—Standing on the portico, and jumping forward.

The pupil, standing on the portico or platform, jumps down, just clearing the beam.

The last two exercises must never be executed from a portico of the first class. The pupils of above seventeen years may jump from the height of ten to eleven feet. The younger pupils can be exercised by jumping from the jumping-table.

ART. VI.—Scaling the portico with emulation.

The instruments of the portico are sufficient for the exercise of twenty or thirty pupils at once.

The Instructor divides his squad into two equal sections, assigns to each pupil his number and the instrument he is to use, according to his strength, and commands—Attention.

1. *Ready for scaling.* 2. March.

At the command march, the pupils run to the portico, seize the instruments assigned to them, climb them with the greatest possible celerity, and sit astride the portico.

The pupils on the platforms can remain standing or seated, the two sections facing each other.

When the Instructor wishes them to descend from the portico, he commands—Attention.

1. *Ready to descend.* 2. One—two—three.

At the first command, each pupil prepares himself to descend according to one of the means explained above.

At the command three, the pupils descend as rapidly as possible, and run to the places which they occupied before the scaling.

ART. VII.—To move upon the portico.

The pupils being well exercised on the horizontal spar, and able to preserve their equilibrium upon it, the Instructor may try to execute the following exercises upon the portico of the second class, (11 feet high :)

1st *Exercise.* To cross the portico forward and backward, being astride. (*Fig.* 111, *Pl. VI.*)

2nd *Exercise.* Being erect, to cross the portico forward and backward, and to turn round in that position. (*Fig.* 110, *Pl. VI.*)

3rd *Exercise.* Standing on the portico, to sit astride, and to rise again.

In commencing, the last exercise will be first executed one foot from the platform, and facing it; the Instructor ought to be present in order to give more confidence to the pupil. The Instructor *stands before* the pupil.

This exercise is afterwards executed on any part of the portico.

4th *Exercise.* Meeting of two pupils on the portico.

The manner in which the two pupils pass each other on the portico is, one of the two lies across the beam, and lets the other pass over him in a standing position.

The Instructor may utilize the cross rope which goes round the portico to execute the following exercises.

1st. *Suspension by the hands.*

2nd. *Progression when suspended.*

The Instructor, if he thinks proper, can cause some of the instruments to be removed during the execution of the last two exercises.

If the pupil be not sufficiently well exercised to cross the portico, the Instructor must follow him closely to rectify his position, and, if necessary, to help him to establish his equilibrium.

CHAPTER XXIII.

Vertical Spars and their Rigging.

The rigging of the vertical spars is nearly the same as that of the portico. The exercises are executed at first individually, and then by emulation.

The following exercises are executed on the spars :

1st *Exercise.* To climb by one ladder, and to descend by the other.

The pupil must be very careful in passing from one ladder to the other.

2nd *Exercise.* To climb and descend by the rope ladder.

3rd *Exercise.* To climb and descend by the knotted rope.

4th *Exercise.* To climb and descend Amoros's ladder.

5th *Exercise.* To climb and descend Bois-Roze's ladder.

6th *Exercise.* To climb and descend the smooth rope.

7th *Exercise.* To climb and descend the double hooked pole.

The instructor utilizes the smooth rope which is in the middle of the vertical spars to execute the following exercises.

8th *Exercise.* To swing forward by means of the rope.

The pupil takes the rope, ascends the platform, (or jumping-table,) puts himself on the edge of it, throws the end of the rope over his shoulders, seizes the rope with both hands as high as he can, the thumbs uppermost, (*a*,) and by an effort of the wrists raises the body, throws himself forward, hangs on the rope with his legs bent, drops the rope when the motion resulting from the impulse is nearly finished, and drops to the ground, according to the rules given.

The pupil may swing better by observing the following rules: Throw back the upper part of the body when you leave the platform; throw the legs forward, so as to pass between the spars almost in a horizontal position, (*b*,) and throw yourself as far as you can when the motion resulting from the impulse is almost finished.

This exercise is also executed by hanging on the rope by one hand only; in that case the body is gathered up.

This exercise may also be executed by two pupils at once.

The least seizes the rope as high as he can reach; the other, placing himself behind the first, grasps the rope still higher.

At a signal given, they abandon themselves to their proper impulse, draw up their legs, and fall to the ground, according to the rules given.

9th *Exercise.* To swing forward, and return to the starting point.

The same rules are to be observed as in the preceding exercise, with this exception, that the pupil instead of dropping on the ground, turns himself over, and returns to the starting point.

It is important that the pupil should not touch the ground while swinging.

These exercises are executed at first from a small elevation, which is augmented gradually.

The Instructor places other pupils near the masts, to prevent any accident.

CHAPTER XXIV.

To Climb and Descend the Masts.

1st *Exercise.* To climb the mast by clasping it with the arms, one foot in front, and the other behind. (*Fig.* 112, *a–b–c*, *Pl. VI.*)

The pupil puts his chest against the mast, clasps it with his arms, puts his right (or left) knee and instep against the mast, presses the left (or right) calf and heel against the opposite side, raises his legs by slipping them up the mast, hugs it forcibly with them, raises the body up, carries the arms higher, and continues in that way, (*a*.)

To descend, the pupil pinches sufficiently with his legs to prevent a too rapid motion, and changes his arms one below the other alternately.

2nd *Exercise.* To climb the mast by clasping it with the arms, one foot on each side.

The pupil puts his chest against the mast, hugs it forcibly, puts one leg on each side of it, the feet pressing closely, raises his arms and body, presses his chest against the mast, raises his legs by slipping them upward, and continues in this way. He descends by preserving the same position, (*b.*)

When the pupil wishes to repose himself, he holds round the mast by putting his fingers between each other, throws the upper part of his body back, with his legs crossed, and maintains himself in that position, (*c.*)

CHAPTER XXV.

Exercises on the Grooved Boards.

1st *Exercise.* To suspend the body by the fingers, holding by them in the grooves. (*Fig.* 113, *Pl. VI.*)

The pupil suspends himself by the two first joints of his fingers, on the highest groove he can reach, draws up his legs, and remains suspended as long as possible, (*a.*)

2nd *Exercise.* To climb and descend by putting each hand successively in the same groove.

The pupil, being suspended on the groove, makes an effort with his fingers to raise his body, grasps with his fingers in the groove above, (*b,*) puts the other hand in the same groove, and continues in that manner.

He descends by the same means.

3rd *Exercise.* To climb and to descend by putting the hands, one after the other, on different grooves.

This exercise is executed like the preceding, with this difference, that the pupil applies the fingers of each hand alternately to a different groove.

4th *Exercise.* To climb and to descend by jerks.

This exercise is executed like the second, with this difference, that the hands are lifted simultaneously from one groove to another.

To descend, follow the same rules.

These exercises are also executed with emulation.

I especially recommend to the pupils the exercises of this Chapter.

CHAPTER XXVI.

Exercises on the Wall.

1st *Exercise.* To climb a wall by the aid of a plank. (*Fig.* 114, *Pl. VI.*)

The pupil places himself at a distance of ten or twelve steps from the plank, runs impetuously, and climbs as high as he can, in order to reach the top of the wall.

If he cannot reach the top with the first effort, he grasps the plank by the edges, and continues to climb up by his hands and feet.

2nd *Exercise.* To climb a wall by the aid of ladders, poles, ropes, &c.

The Instructor applies the instruments he wishes to be used, against the wall, and commands—Attention.

1. *Ready to scale.* 2. March.

At the command march, the pupils grasp the instruments assigned to them, and climb rapidly, according to the rules given. Once on the top of the wall, they establish themselves in order.

The same rules are to be observed in descending.

SCALING THE WALL WITHOUT INSTRUMENTS.

1st *Exercise.* To climb the wall, and to descend by the aid of the feet and hands. (*Fig.* 115, *Pl. VI.*)

The wall appropriated to this exercise must have inequalities, either hollows or projections, to support the climbers.

The pupil climbs the wall, or descends from it, by the inequalities which he finds in it.

The Instructor places himself near the wall, to aid the beginners if necessary.

This exercise is also executed by emulation.

2nd *Exercise.* Running against a wall, to take a starting point, and to climb on the top to descend. (*Fig.* 116, *a–b*, *Pl. VI.*)

The wall must have a hole about one yard from the ground. At a distance of ten or twelve steps, the pupil runs toward the wall, his eyes fixed on the starting point, puts one of his feet in it, raises his body by a rapid extension of the calf, grasps the edge of the wall, or any other point he can hold of, with one hand, (*a;*) puts the other hand to the same height, and makes an effort with the wrists to raise the body and establish himself on the wall.

At the moment the pupil reaches the wall, he puts the palm of one hand against it, to prevent his body being hurt.

To descend, the pupil puts himself across the wall, on his stomach, slips down until his body is fully stretched, and his hands on the edge of the wall; then he puts one hand flat against the wall, (*b,*) on a line with his hips, lets go the edge with the other, throws his body a little back, by pushing with the hand applied to the wall, and drops down, bending forward.

3rd *Exercise.* Disposition of a number of pupils for the attainment of an elevated point.

The pupils are numbered, and the Instructor explains the duty of each.

1st *Disposition.* (Two pupils.) (*Fig.* 117, *Pl. VI.*)

The first pupil leans his back against the wall, his legs a little bent, his hands forward, and his fingers entwined.

The second pupil puts one foot on the hands of the first, raises himself, and puts the other foot on the shoulder of the same, his hands flat against the wall; he stretches his body, and seizes the edge of the wall or any other point he can reach.

The first pupil helps this movement, by raising his body as much as possible.

Grown pupils can, in this way, scale a wall of about eleven feet in height.

2nd *Disposition.* (SEVEN OR NINE PUPILS.) (*Fig.* 118, *Pl. VI.*)

By this exercise a great height can be reached without any support.

The nine pupils are numbered from right to left; the first four form a solid square—the first pupil facing the third. and the second facing the fourth.

The first and third pupils take the positions, as explained in wrestling with the shoulders, (see *Fig.* 38, *Pl. II.*) the second and fourth do the same, the arms passing over or under those of the first and third.

The next four pupils take the same position on the shoulders of the first four.

The ninth pupil reaches the height from the shoulders of the second four pupils.

The bystanders assist these movements.

These nine pupils must be active, clever, and slender fellows. About sixteen feet can be reached in this way.

The same exercise against a wall with seven pupils only: The fifth and sixth pupils take their positions on the shoulders of the first four, leaning with one shoulder against the wall; the seventh climbs upon them, (*a.*)

PART III.

RUNNING AND VAULTING.

CHAPTER I.

ART. I.—Regular running step. (*Fig.* 119, *Pl. VI.*)

The Instructor commands —Attention.

1. *Squad forward.* 2. Regular running step—3. March.

At the third command, the squad moves quickly forward, running, and preserving the line, each pupil observing the rules given in the article on the Gymnastic Chain.

When running in file, the pupils must always be three feet apart.

The Instructor, wishing to stop the squad, commands—Squad, Halt.

At this command, the squad stops, takes the proper distance, and dresses.

The velocity of the running step is two hundred movements in a minute; about three miles in twenty minutes.

The duration of the run must be increased progressively.

If not compelled by absolute necessity, the duration of the run should not exceed twenty minutes.

The running step is never used obliquely.

ART. II.—Running backward.

The Instructor commands—Attention.

1. *Run backward.* 2. Ready—3. March.

At the first command, the pupils put the whole weight of the body upon the right feet.

At the command march, they put the left feet quickly back, without turning the head; the toes of the left foot about three feet behind those of the right: do the same with the right foot, and continue in this way for thirty or forty steps only.

The pupils are brought, by progressive exercises, to lengthen the steps to three feet.

ART. III.—Swift running.

The Instructor commands—Attention.

1. *Swift Running.* 2. Take the position—3. Ready—4. March.

At the second command, the pupils advance their right feet about fifteen inches before the left; the right knee bent, and the left leg stretched out; lean the upper part of the body forward, put the elbows back, the fists on a level with the lower ribs, the nails in, the head straight.

At the command march, they throw themselves quickly forward, with the greatest force they can.

The length of the steps in this run is not determined.

The Instructor will endeavor to explain that the surest way to run quickly, is not to lengthen the steps, but to precipitate them.

The pupils must not forget, that when running with the greatest possible velocity, they ought to spare their strength, so as to be able to reach their destination.

This is the general principle for all the exercises by emulation.

The pupils are brought progressively forward in this exercise.

CHAPTER II.

Vaulting on the Spar.

The Spar is more or less elevated, according to the Instructor's indication.

1st *Exercise.* To put himself astride the spar. (*Fig.* 120, *Pl. VII.*)

The pupil puts his hands on the spar, at a distance of about eighteen inches one from the other, the fingers forward; raises his body, (with a jump, if the spar is too high,) holds his weight on his hands, stretches the right leg, passes it horizontally over the spar, turns to the left, and sits astride it; the head and body straight, the arms and legs hanging naturally, the toes slightly bent inward.

This exercise is also executed by passing the left leg over the spar and turning to the right.

2nd *Exercise.* To turn round, being astride the spar.

The pupil first passes the right leg over the spar, as if for descending, and then the left leg on the opposite side of the spar.

This exercise is also executed by first passing the left leg over the spar.

3rd *Exercise.* Being astride, to jump to the ground. (*Fig.* 121, *Pl. VII.*)

To jump to the right, the pupil places his hands on the spar near his thighs, the fingers outward, the thumbs above; balances his legs twice forward and backward, and by the last impulse of the legs, combined with an effort of the wrists, passes the left leg over the spar, and drops down according to the rules given.

To jump to the left, the same rules are observed.

4th *Exercise.* To pass over the spar. (*Fig.* 122, *Pl. VII.*)

The spar is elevated about three feet, the pupil stands fifteen paces off, runs towards it, strikes the ground with his feet, puts his hands on the spar, the fingers grasping it on both sides, raises his legs backward, at the same time inclining his head, stretches out his arms, gives an impulse to his body, from right to left, (or from left to right, according

to the position of his hands,) throws himself over the spar, the legs joined and stretched out horizontally, and drops down, bending forward.

If the pupil is well exercised, he can raise his legs higher than his head, so that the body may form an angle of fifty degrees with the horizontal line.

If the spar is too high to be vaulted over in the manner explained, the following rules must be observed. (*Fig.* 123, *a–b*, *Pl. VII.*)

The pupil takes a start as above, puts his hands on the spar, the fingers forward, his arms parallel to each other, (*a*,) raises his body by an effort of the wrists, gives his body a strong impulse to his right, (or to the left,) touches the spar with his stomach, grasping it with his hands on each side, (*b*,) and finishes the movement by throwing over his legs.

CHAPTER III.

Vaulting on the Parallel Bars.

The exercises on the parallel bars are executed without command, and separately.

ART. I.—Fixed parallel bars. (*Mach.*, *Pl. III.*, *No.* 27.)

1st *Exercise.* Suspension by the hands. (*Fig.* 124, *Pl. VII.*)

The pupil places himself between the bars, seizes each with one hand, the palm on the upper part of the bar, the thumbs inside, the fingers outside, raises the body by an effort of the wrists, the head straight, the legs hanging, the heels joined; he sustains himself in that position as long as possible. Puts his feet on the ground, and at the same time takes away his hands.

This exercise can be executed by many pupils at once.

2nd *Exercise.* To move forward and backward, by advancing the hands alternately. (*Fig.* 125, *Pl. VII.*)

The pupil suspends himself on one end of the bars, makes the movement forward by slipping the hands alternately, about five inches at a time, and continues in this way to the other extremity: once there, he balances his legs forward and backward, counting one; repeats the same, counting two; repeats the same again, and drops to the ground, counting three.

This exercise backward is executed by the same method, and by the inverse means.

3rd *Exercise.* To move forward or backward by jerks.

The pupil, being suspended on the bars, slightly bends the arms, and by a jerk puts his hands about five inches forward simultaneously, the upper part of the body inclined forward. He continues in this way to the end of the bars, and drops down in the manner explained in the second Exercise.

The movement backward by jerks is executed in the same manner.

4th *Exercise.* To lower and to raise the body by bending and extending the arms. (*Fig.* 126, *Pl. VII.*)

The pupil, being suspended on the bars, lowers his body by bending slowly his arms, and at the same time bends his legs also, in order not to touch the ground, raises his body again by an effort of his wrists, and repeats the same movement several times.

In the beginning, the pupil bends the arms but very little; being well exercised, he lowers the body to their utmost extent.

5th *Exercise.* To swing the legs forward and backward. (*Fig.* 127, *Pl. VII.*)

The pupil, being suspended by his arms, swings his legs slowly forward and backward, and augments progressively the extent of the movement, not going much beyond the horizontal line, to prevent turning over.

The best exercised pupils can occasionally try to throw the body over, or to remain in a vertical position, the head downward.

6th *Exercise.* uspension by the hands and feet. (*Fig.* 128, *Pl. VII.*)

The pupil, being suspended by the hands, throws his legs back, hooks them on the bars, streches his body, and lowers it, resting suspended.

The pupil raises his body, drops his legs, and takes the first position.

The Instructor may support the weakest pupils by the belt ring.

This exercise is also executed by turning the back downward.

7th *Exercise.* To throw the legs forward, first on the right bar, and then on the left. (*Fig.* 129, *Pl. VII.*)

The pupil, being suspended by his hands, throws his legs forward on the right bar, and counts one, the calves resting on the bar; puts them between the bars again and counts two; then upon the left bar; and continues in this way.

The Instructor accustoms the pupils to put their legs first on one bar, and then on the other, without coming to the first position.

8th *Exercise.* To throw the legs backward on the right bar, and then on the left. (*Fig.* 130, *Pl. VII.*)

The pupil, being suspended by his hands, throws his legs backward upon the right bar, and counts one, the calves resting on the bar; puts them between the bars again, and counts two; then upon the left bar; and continues in this way.

The Instructor also accustoms the pupils to throw their legs from the right bar forward, to the left bar backward; then on the left bar forward and the right bar backward; and then to return to the first position.

9th *Exercise.* To sustain the body horizontally on the wrists. (*Fig.* 131, *Pl. VII.*)

The pupil, being suspended by the hands, bends slowly the upper part of the body forward, the whole weight being on the wrists, raises his legs to a horizontal line, and remains in that position.

This exercise may be repeated three or four times.

10th *Exercise.* To drop to the ground forward to the right or left. (*Fig.* 132, *Pl. VII.*)

The pupil, being suspended by the hands, throws his legs forward, and counts one; then backward and counts two; then forward again over the right bar, and by his hands pushes his body in that direction, and drops to the ground, counting three.

With the third movement, the left hand is put on the right bar, where the right hand was.

The pupil observes the same rules in throwing himself forward over the left bar.

11th *Exercise.* To drop to the ground backward to the right or left. (*Fig.* 133, *Pl. VII.*)

The pupil, being suspended by his hands, throws his legs back, counting one; then forward, counting two; throws them back again, the calves straight over the right bar, pushing his body in that direction, and drops to the ground, counting three. The left hand changes its position as above.

He observes the same rules in throwing himself backward to the left.

12th *Exercise.* To JUMP OVER THE BARS FORWARD TO THE RIGHT OR LEFT, IN THREE TIMES. (*Fig.* 134, *Pl. VII.*)

The pupil places himself ten or twelve steps from the bars, in a perpendicular line to their direction, springs forward, strikes the ground with his feet, counting ONE; puts one hand over each bar, the left on the first bar, the fingers inside, raises his body, lowers his head, and, stretching out his legs, passes them between the bars, counting TWO; then over the second bar, and drops to the ground, counting THREE, the left hand taking the position of the right.

13th *Exercise.* To JUMP OVER THE BARS, AND TO THROW HIMSELF BACK TO THE RIGHT OR TO THE LEFT, IN FOUR TIMES.

The pupil springs forward, strikes the ground with his feet, and enters between the bars as in the preceding exercise, counting ONE; throws his legs forward, counting TWO; throws them back, counting THREE; passes them over the right bar, and drops to the ground, counting FOUR.

This exercise to the left is executed by the same rule.

14th *Exercise.* JUMPING OVER THE BARS IN TWO TIMES.

1st. *By placing the hands on the two bars.*

The pupil springs forward, strikes the ground with his feet, counting ONE; puts his hands as in the preceding exercise, raises his legs backward, inclining his head, stretches his arms, gives an impulse to his body from left to right, passes over the bars, and drops to the ground, counting TWO.

This and the two preceding exercises, are also executed by placing the right hand on the first bar, and the left hand on the second. In that case, the body is raised from right to left.

2nd. *By placing the hands on the first bar.*

In this exercise the two hands are placed on the first bar.

3rd. *By placing the hands on the second bar.*

This exercise differs only from the preceding, by both hands being placed on the second bar.

CHAPTER IV.

Movable Parallel Bars.

(Pl. III., No. 26.)

The bars are raised about six feet from the ground, that the pupils may not touch it when they are hanging by their hands.

1st *Exercise.* To MOVE FORWARD AND BACKWARD WHEN SUSPENDED BY THE HANDS. (*Fig.* 135, *Pl. VII.*)

The pupil puts himself under the bars, jumps and suspends himself by grasping them, his legs hanging naturally.

The pupil moves forward and backward, by advancing his hands alternately: he may also move by jerks.

2nd *Exercise.* To RISE ON THE BARS, BEING SUSPENDED ON THEM. (*Fig.* 136, *Pl. VII.*)

The pupil being suspended on the bars, raises his body, puts the fore-arms in succession, one on each bar, and by an effort of his wrists raises his body until his arms are at full length.

The pupil may take at once that position without leaning on the bars with his fore-arms; in that case the upper part of the body is put forward.

3rd *Exercise.* To HOOK THE BARS WITH THE HANDS AND FEET, THE BACK TURNED DOWNWARD. (*Fig.* 137, *Pl. VII.*)

The pupil, being suspended by the hands, raises his body by an effort of the wrists, throws his legs forward, bending his head back, hooks one heel over each bar, and remains in that position.

4th *Exercise.* To STAND ON THE BARS. (*Fig.* 138, *a–b*, *Pl. VII.*)

The pupil, being suspended, takes the position explained above; by an effort of the hands and legs he raises his head above the bars, (*a*,) slips his legs close to his hands, moves the upper part of his body forward, lets go the bars, and quickly seizes them before his knees, raises his body by stretching his arms, puts his feet back, and places them one over each bar, and raises upright with precaution, (*b*.)

5th *Exercise.* BEING ERECT ON THE BARS, TO HOOK ON THEM WITH THE HANDS AND FEET, THE FACE DOWNWARD.

Being erect on the bars, the pupil stoops and seizes them with his hands, slips his feet behind, lowers slowly his body, and remains in this way, hooked by the feet and hands.

To descend, the pupil conforms himself to one of the rules explained in Chapter III.

These exercises can be greatly varied by raising or lowering one of the bars, or by placing them in different inclined planes, and by repeating the exercises described in the chapter on fixed parallel bars.

Two of the strongest pupils are placed near the bars, for precaution.

CHAPTER V.

Dynamometer.

In the use of this instrument I particularly recommend the greatest vigilance to the Instructors, and the greatest care to the pupils. As a general rule, a Dynamometer should not be used under any circumstance by the pupils when alone. The emulation instigated by vanity, or self-love badly understood, may be the cause of serious accident. It is important to make the pupils understand, that the strength, needful as it may be, is at the same time the least important quality in gymnastics. The pupil should never make too great an effort with this instrument, or exert himself too much. *Nosce te* must be the moral maxim.

Fig. 140, *Pl. VII*, represents the use of the Dynamometer for pression with the hands. The Instructor should be present, to observe the indication of the instrument, and mark the pression on his list.

Fig. 141, *Pl. VII*, represents the force of the loins. The pupil places the instrument conveniently under his feet, seizes the handle with both hands, and pulls slowly. The Instructor being present, observes the muscles and veins of the pupil's neck, who should be without a neckerchief.

When the Instructor perceives that the veins swell, and the face becomes flushed, he immediately stops the exercise, and marks the weight upon his list.

The exercise of traction (*Fig.* 142, *Pl. VII.*) is very similar to the above, with this difference, that the pupil is seated. The same rules are to be observed.

DOWNWARD BLOW. (*Fig.* 143, *Pl. VII.*) The pupil observes to strike with his fist just in the middle of the cushion.

STRAIGHT FORWARD BLOW WITH BOTH HANDS. (*Fig.* 144, *Pl. VII.*) The instrument is placed as indicated in the figure.

Straight forward blow with the right and with the left hand. (*Fig.* 145, *Pl. VII.*)

The instrument is placed as indicated in the figure.

Pressure against the Chest. (*Fig.* 146, *Pl. VII.*)

This exercise is easily performed. Small children, who cannot well seize the instrument, place a handkerchief around it. The above rule is to be observed by the Instructor.

The force of sustentation.

This exercise is very useful for man in whatever condition of life he may be placed. It consists of placing upon the shoulders a sack with a known weight of dust, sand, tan-bark, &c., and carrying it to a given distance, walking carefully.

The Instructor generally should judiciously conduct the capacity of their pupils, so as to learn the weak points as well as the strength of each, and ought to choose in the variety of exercises those which are the best adapted to improve the weak muscles. He should also check the temerity and imprudence in the strong pupils.

CHAPTER VI.

Vaulting on the Trapezium.

(Mach., Pl. II., No. 16, *p.*)

The exercises on the Trapezium are executed separately, and without command.

The Instructor places one of the pupils near the Trapezium to help him, who exercises, if it should be neeessary.

1st *Exercise.* To seize the base of the trapezium, and raise the body by an effort of the wrists. (*Fig.* 139, *Pl. VII.*)

The pupil seizes the base of the Trapezium, the thumbs under, the hands separated about eighteen inches, raises his body by an effort of the wrists, the legs straight, the heels touching each other, and gently returns to the ground.

The Instructor causes this exercise to be repeated many times in succession.

By degrees the pupil will acquire sufficient strength to put his head quite over the base of the Trapezium.

2nd *Exercise.* To seize the base of the trapezium, swing, and throw himself as far as possible. (*Fig.* 147, *Pl. VIII.*)

The pupil runs toward the Trapezium, seizes the base, carries it forward by the impulse he has given to the body, comes back, repeats many times this movement of oscillation, giving to it all the force he can, and letting go the base, drops to the ground forward according to the rules given.

3rd *Exercise.* To raise over the base of the trapezium, and to descend, by leaning on the stomach. (*Fig.* 148, *a–b–c*, *Pl. VIII.*)

The pupil seizes the base of the trapezium, by an effort of the wrists, raises the body as high as he can, at the same time throws his legs (*a*) forward, and raising them, passes them over the base by throwing back his body, which by the continuation of this movement will be caused to rest on the stomach, the arms set a kimbo, (*b.*)

To descend, the pupil slips slowly on the base, the arms supporting the weight of his body, (*c,*) puts the feet on the ground, and lets go the base.

This exercise is also executed by giving to the base the movement of oscillation indicated in the second exercise.

4th *Exercise.* To get on the base of the trapezium, to sit on it, and to descend. (*Fig.* 149, *a–b–c–d–e–f*, *Pl. VIII.*)

1st Manner.

The pupil places himself on the base by leaning on his stomach, as explained in the third exercise, puts his right hand on the rope on his right as high as he can reach, (*a,*) raises the body by an effort of the wrists (*b*) until the left arm is stretched to its full length, turns to the right, and sits on the base, (*c,*) the thighs closed; at the same time seizing quickly the rope of the trapezium below the right hand, on a line with the shoulder, he catches the opposite rope with his right hand, (*d.*)

The pupil observes the same rules in taking position from the left.

To descend, the pupil throws the body back, and lets slip down his thighs until the calves touch the base, slides his hands also on the ropes, and seizes the base near his thighs, the thumbs underneath, (*e,*) continues to turn the body over, (*f,*) lets go the base with both hands at once, and drops to the ground according to the rules given.

2nd Manner. (*Fig.* 150, *a-b*, *Pl. VIII.*)

The pupil lies on the stomach, as explained in the third exercise, puts his right hand as high as he can reach on the rope, that side, raises his body as explained above, (*a,*) draws up his legs, passes them over the base without touching it, sits down, and seizes the rope on a line with the shoulders.

To descend, the pupil puts his hands simultaneously on the base, near his thighs, throws his body over, raises himself by an effort of his wrists, crosses his legs, to allow them to pass between his arms below the base, (*b,*) stretches them forward, returns over the base by a new effort of his wrists, and drops down, as explained in the third exercise.

5th *Exercise.* To grasp the base, to hang on it by hooking the feet, and to descend. (*Fig.* 151, *a–b–c–d*, *Pl. VIII.*)

The pupil seizes the base by the middle, the hands almost touching each other, makes an effort with his wrists, throws his body back, stretches his legs, applies them against the base forward, hooks his feet on the inner sides of the ropes, slips them down to the base, the insteps against the ropes, lets go his hands slowly, and finishes by turning his body over, which rests suspended by the feet, (*a.*)

To come again to the position, the pupil draws up the upper part of his body forward, passes his hands under his thighs, grasps the base, (*b,*) unhooks his feet, joins his legs and puts them slowly back, stretches his arms, (*c,*) lets go the base with one hand, and remains suspended by the other, stretching his legs at full length.

In this position the pupil turns on himself, (*d,*) puts the free hand on the base, makes an effort with his wrists, resumes the position on his stomach, and drops down in one of the manners explained in the preceding exercises.

6th *Exercise.* To climb and to descend on the ropes of the trapezium. (*Fig.* 153, *a–b–c–d–e–f–g–h–i.*)

The pupil seizes the ropes (*a*) and climbs on them to about the height of four and a half feet from the base; makes an effort with his wrists; throws his legs forward, so as to pass them between the ropes, (*b*;) turns his body entirely over, so that the legs describe a complete circle, the wrists supporting the whole weight of the body; puts his feet on the

base, and changes the position of his hands one after the other, the fingers forward on a line with his hips, (*c* ;) turns his body forward, (*d*,) and sits on the base, which he seizes with both hands close to his thighs, (*e* ;) then throws his body over backward, slips his thighs on the base down to the joints of the knees, continues turning over (*f*) his legs passing between the ropes, his body under the base, his legs as nearly as possible in a vertical position, (*g*,) the toes pointing to the ground; draws up his body by an effort of the wrists, crosses his legs, passes them under the base, (*h*,) between his arms, puts them out forward to take the position on the stomach, and drops down gently.

7th *Exercise.* To get over the base of the trapezium, and to maintain the body over and under it in a horizontal position. (*Fig.* 153, *a–b–c–d–e–f, Pl. VIII. and IX.*)

The pupil, being seated on the base, seizes the ropes about six inches above it, slips gently forward in a manner the most convenient to him, turns himself over, and stiffens and supports himself in a horizontal position, with his face turned upward, (*a.*) After a while he raises his legs vertically, (*b*,) continues the movement until he finds himself again in a horizontal position, (*c*,) but with his face downward, the legs at full length; he remains in that position as long as he can, with his muscles contracted.

He then lowers his legs, (*d*,) raises them again by a strong jerk, and returns to the horizontal position, after which he raises his body and sits down, places his hands close to his thighs, the thumbs forward, (*e* ;) the fingers behind, throws himself over forward, passes the legs crossed under the base, gets on the trapezium again, his stomach leaning on the base, (*f*,) changes the position of his hands, the fingers forward, the thumbs back, and descends.

The trapezium exercises are done slowly, without jerks or sudden movements.

CHAPTER VII.

Vaulting on the Wooden Horse.

(Mach., Pl. I., No. 8)

The Instructor places two pupils near the horse, to render assistance if it should be necessary.

The pupils count aloud all the time of the exercises.

ART. I.—Vaulting from behind the horse.

1st *Exercise.* To raise the body and the legs, the hands placed on the croup and to dart backward. (*Fig.* 154, *a–b*, *Pl. IX.*)

The pupil stands ten or twelve steps behind the horse, runs, takes a pring, at the same time puts his hands on the croup and counts one, he fingers outward, the thumbs about six inches from each other, lowers his head, and by a vigorous effort raises his body high enough to form an angle of about fifty degrees with the horizontal line, the weight of his body being supported by his arms, which remain nearly straight, (*a*,) gives the body a slight impulse backward, and drops down, counting two, the arms forward, the closed hands on a line with the shoulders, (*b.*)

OBSERVATIONS.

All the exercises of the first article, and some of the second, require the pupils to take a start by running from a given distance, and to spring from the ground.

2nd *Exercise.* To sit on the croup right or left face. (*Fig.* 155, *a–b*, *Pl. IX.*)

The pupil runs towards the horse, puts his hands on the croup, as above, rises by passing the feet to the left of the horse, and sits on it left face, counting one, (*a* ;) stretches his arms parallelly forward, the closed hands on a line with the shoulders, the fingers in, and counts two; slips from the horse, giving a slight spring, and drops down counting three.

3rd *Exercise.* To jump on horseback, and to descend. (*Fig.* 156, *Pl. IX.*)

The pupil puts his hands on the croup, counting one; rises, spreading his legs, seats himself, counting two, (*a*,) the body upright, the legs hanging naturally, the toes a little in, puts his arms forward parallelly to each other, counting three; the closed hands on a line with the shoulders, the nails in.

To descend, the pupil places his hands close before his thighs, the fingers outward, rises on his wrists, counting one, (*c*,) his arms close to his body, lowers his head, throws his legs back, counting two, and drops down, counting three.

4th *Exercise.* To jump on horseback, then on the saddle, then on the neck, and to descend. (*Fig.* 157, *a–b–c*, *Pl. IX.*)

The pupil runs towards the horse, puts his hands on the croup, as in the preceding exercises, counting one,(*a*,) seizes the pommel, and jumps in the saddle, counting two, (*b* ;) then jumps on the neck, passes his right leg over it, counting three, the hands placed on each side of the horse, the fingers forward, and throws himself as far as he can, helping himself with his arms and legs, counting four.

The whole squad may execute this exercise without interruption in the following manner: the first pupil throws himself on his back, and jumps into the saddle, and remains there until the second jumps on the croup; then he passes to the neck, and remains there until the second jumps into the saddle, and the third on the back, then he descends, and so on.

5th *Exercise.* To jump on the croup kneeling, and to descend. (*Fig.* 158, *a–b*, *Pl. IX.*)

The pupil runs towards the horse, puts his hands on the croup, rises on his wrists, counting one, the legs bent; falls on his knees on the saddle, counting two; kneels upright, holds his arms forward, counting three, (*a*,) the closed hands on a line with the shoulders.

To descend he puts his hands close to his knees, counting one, (*b* ;) the fingers out, raises himself on his wrists, counting two; his arms close to his body, throws himself backward, and drops down, counting three.

6th *Exercise.* To stand upright on the horse, and to descend. (*Fig.* 159, *a–b–c*, *Pl. IX.*)

The pupil runs towards the horse, puts his hands on the croup, rises, counting one, his body bent, (*a*,) puts his feet on the croup, counting two, and stands upright, counting three, the arms stretched out, (*b.*)

To descend, the pupil springs lightly on the back of the horse, counting one, bends his body forward, raises his legs, takes a starting point on the horse with his hands, (*c*,) throws himself backward, counting two, and drops down, counting three.

7th *Exercise.* To jump on the saddle, and to descend. (*Fig.* 160, *a–b–c–d*, *Pl. IX.*)

The pupil runs towards the horse, puts his hands on the croup, rises on his wrists, counting one, his body in a horizontal position, his legs spread, gives a forward impulse to his body, seizes at the same time the

pommel with both hands counting TWO, jumps into the saddle counting THREE, his arms forward, his hands closed, on a line with the shoulders, (*a*.)

To descend, the pupil places his left hand on the pommel, the fingers out, the thumbs in; puts the right hand flat before his right thigh, counting ONE, his left knee touching the saddle, (*b*,) puts out his right foot, passes it over the horse's back to the side of his left foot, and at the same time places his right hand on the back part of the saddle, counting TWO, the thumbs in, the fingers out, (*c*,) lowers his head, rises on his wrists, (*d*,) the weight of his body on the elbows, and drops down, counting THREE.

8th *Exercise*. TO JUMP OVER THE NECK, AND TO DESCEND WITHOUT SITTING ON IT. (*Fig*. 161, *a–b–c–d*, *Pl. IX*.)

The pupil runs towards the horse, puts his hands on the croup, counting ONE, (*a*,) then puts them quickly on the neck, without sitting in the saddle, (*b*,) counting TWO, the weight of his body on his wrists, (*c*.)

To descend, the pupil balances his legs forward and backward, and by their impulse, combined with an effort of his wrists, passes his right leg over the saddle, and descends to the left of the horse, the feet closed, (*d*.)

9th *Exercise*. TO LEAP OVER THE HORSE IN THREE TIMES.

The pupil runs towards the horse, puts his hands on the croup, counting ONE, then quickly on the neck, counting TWO, and drops down as far forward as he can, counting THREE.

10th *Exercise*. TO LEAP OVER THE HORSE IN TWO TIMES. (*Fig*. 162, *a–b–c*, *Pl. X*.)

The pupil runs towards the horse and gives himself such an impulse, that with a spring he can put his hands on the neck of it, counting ONE (*a*,) and passes over the horse, counting TWO, (*b*.)

This exercise is executed also by putting the hands on the croup of the horse instead of its neck, in that case the pupil must keep the upper part of his body upright while passing over the horse, (*c*.)

11th *Exercise*. TO JUMP ON THE HORSE FROM LEFT TO RIGHT, OR FROM RIGHT TO LEFT. (*Fig*. 163, *Pl. X*.)

The pupil runs toward the horse, puts his hands on the croup, rises, counting ONE, passes his closed legs on the left side of the horse, raises his left hand, passes his right leg over the croup, puts his left hand again between his thighs, takes off his right hand, and sits on the horse's back, counting TWO, the legs hanging naturally.

When the pupil is well exercised, he can get into the saddle with one spring.

The pupil descends by one of the methods indicated above.

12th *Exercise*. TO LEAP OVER THE HORSE, FROM LEFT TO RIGHT, OR FROM RIGHT TO LEFT. (*Fig*. 164, *Pl. X*.)

The pupil executes what is explained in the preceding exercise, only instead of sitting on the croup, he throws both legs over the horse, and drops to the right, according to the rules given.

He leaps to the left in the same manner.

ART. II.—VAULTING ACROSS THE HORSE.

1st *Exercise*. TO JUMP ON THE HORSE, AND TO DROP DOWN. (*Fig*. 165, *Pl. X*.)

The pupil places himself on the left side of the horse, seizes the pommel of the saddle with the left hand and the back part with the right hand, bends the inferior limbs, makes an effort with his wrists, quits the ground with a strong spring, and counts ONE, the weight of the body resting on the hands, the thighs touching the saddle.

After this, the pupil extends his right leg, lets go the hind part of the saddle, passes the leg over the croup without touching it, at the same time advancing the right shoulder, and placing his right hand near to the left, sits quietly in the saddle, counting TWO, his arms stretched out parallelly forward.

To descend, the pupil seizes the pommel with the left hand, the fingers outside, the thumb inside, puts the right hand flat, near the right thigh, and rises, counting ONE; he passes the right foot over the croup to place it close to the left, and, at the same time puts the right hand on the hind part of the saddle, counting TWO. He drops down, counting THREE.

2nd *Exercise*. TO KNEEL ON THE SADDLE AND JUMP FORWARD. (*Fig*. *a–b*, 166, *Pl. X*.)

The pupil seizes the saddle with both hands, jumps into it on his knees, counting ONE, stretches out his arms parallelly forward, counting TWO, (*a*.)

After this he lowers his arms, gathering up his body, (*b*,) gives a spring, by throwing his fists forward and upward, jumps from the saddle and drops down, counting THREE.

3rd *Exercise*. TO LEAP OVER THE HORSE BY PUTTING THE HANDS ON THE POMMEL AND THE HIND PART OF THE SADDLE, THE LEGS PASSING BETWEEN THE ARMS. (*Fig*. 167, *Pl. X*.)

The pupil jumps as in the preceding exercise, counting ONE; gathers up his legs as much as possible to pass them between his arms without touching the saddle, lets go with the hands, and drops down on the other side of the horse, counting THREE.

4th *Exercise*. TO LEAP OVER THE HORSE BY PASSING THE LEGS OVER THE CROUP OR NECK. (*Fig*. 168, *Pl. X*.)

The pupil starts from a distance of ten or twelve steps, seizes the saddle with both hands, counting ONE; raises his legs, leaning his head forward, and stretches out his arms, gives to his body an impulse from left to right, or from right to left, passes over the horse, the legs joined, and drops to the ground, counting TWO.

5th *Exercise*. TO LEAP OVER THE HORSE BY RESTING ONE HAND ON THE SADDLE.

The pupil springs from a given distance, puts the right hand on the saddle, passes over the neck of the horse, keeping his legs joined, and drops down on the other side, the left hand taking the place of the right.

This exercise is also executed by putting the left hand on the saddle, and passing the legs over the croup.

Fig. 169, *a–b–c*, represents the position the pupils must take when exercising on the windlass.

Fig 170, 171, 172, 173, represents the exercises with the rings.

EXPLANATION OF MACHINERY

AND

INSTRUMENTS USED IN GYMNASTICS.

PLATE I.

No. 1. *Belt,*

Is generally made of a strong worsted stuff; never of leather. I give the breadth only, which must never be less than four inches for men or youths. The most corpulent can have the belt still wider, and no gymnast should practise without it. I strongly recommend this rule to the Instructors.

No. 2. *Gymnastic Chain,*

Is used for running, and to accustom the pupils to the fatigue of walking. I have given the largest dimensions of the circles as well as of the path. For young pupils twelve feet diameter will be sufficient, and the path three feet wide, which must be covered with fine sand from three to six inches deep.

No. 3. *Striped Bullet:*

A Gymnasium for thirty pupils should have six, of different sizes: four pounds, six pounds, and ten pounds.

No. 4. *Club:*

Four pair, at least, of different sizes, should be in a Gymnasium; the largest size is here given; the least may be eighteen inches long, and four inches in diameter at the thick end. Maple is the best wood for them.

No. 5. *Handle for Struggling,*

Is made of hard-wood, one and a half inches in diameter, for the largest part; one inch in diameter is sufficient for young children: the rope, in all, may be half an inch thick.

No. 6. *Crutch,*

Is made of hard-wood, the heads seven inches wide for men, and five inches for children. The stick to be always one and a half inches in diameter.

No. 7. *Leaping Posts:*

In a well-built Gymnasium, they should be fixed as represented in the Plate; in a small Gymnasium, they can be movable, providing the supports have always the divisions, from two to three inches, distinctly marked in oil color. The cross-rope for grown-up pupils, half an inch in diameter; for young ones, a quarter of an inch. The bags, (*B B,*) filled with six pounds of sand.

No. 8. *Horse,*

One of the most essential instruments in a Gymnasium, ought to be carefully constructed according to the dimensions given. The principal teachers will always have in mind, that any instrument, made for gymnastic exercises, should last at least thirty years, and that no expense should be made for bad work.

For young pupils the length can be reduced to six feet, but never to less; in that case the thickness of the horse may be reduced by two inches only; the other dimensions as given in the Plate.

In some Gymnasia, the horses are movable. I do not recommend them to be so: solidity and durability are to be considered.

No 9. *Jumping-Table,*

Is made of pine-wood; a very necessary instrument in a Gymnasium which possesses the vertical spars. The small schools may dispense with it; but the Instructor will always have in view to replace it by one of less costly construction, and daily accustom his pupils to jump from a height of five to seven feet, but never from a greater. The Instructor should never allow the pupils to practise without the belt, or without its being drawn tight.

No. 10. *Leaping Pole:*

The best hard and well-grained wood is used for this instrument. Its diameter varies according to the age of the pupils, viz.: one inch for young pupils; one inch and a half for full-grown ones. The wood must be selected with the greatest care, especially for the longest. Once only in my whole practice have I seen the leaping pole broken while being used in leaping over a ditch twenty-four feet wide, and this was a sufficient warning for me.

No. 11. *Stilts,*

Made of the best hard-wood. The diameter of the stick is one inch or one and a quarter; the upper part invariably four feet and a half long; the under part from two to five or seven feet, according to the skill of the pupils.

No. 12. *Sparring Ball,*

Made of strong soft leather, stuffed with horse-hair; the dimension varies from eighteen inches to two feet in diameter.

No. 13. *Foot Balls,*

Made of thick India rubber; vary in size from four to eight inches in diameter. I regard the foot or hand India rubber balls

as one of the best means of rendering the pupils graceful. I recommend them strongly to the pupils of both sexes.

No. 14. *Iron Balls,*

Should be used by grown pupils only.

No. 15. *Dumb Bells:*

The use of them is general and very beneficial.

PLATE II.

No. 16. *Portico:*

This is a new gymnastic machine, which I introduce to the American public. On its merits volumes might be written. No bodily exercise is correctly called gymnastic if not executed with the aid of the portico; the whole system of our physical education is incomplete without it.

To climb a rope or pole, a few feet from the ground, is very good exercise, but to get on the top of the portico or platform, the different manners of settling on it comprise nearly the whole system of bodily training. The portico is to gymnastics what algebra is to mathematical calculation; only see how all the study is simplified; how amusing all the elementary efforts of little boys, or big heavy ones, appear.

In large cities, where gymnastic exercises are practised in rooms, the portico cannot be used; but in country schools the portico should occupy the best part of the playing ground, or let the pleasant shade of the grove be assigned to it. Even the children of common schools should have a portico.

I here give the dimensions of a portico of the first class for grown pupils in colleges, universities, academies, military or naval schools, or fire companies: the boys can have a portico of ten to eleven feet high, with all the instruments less in proportion.

For greater security, the top of the portico may have hand-rails, four feet high and six feet apart; it will give confidence to beginners crossing from one platform to another, but will soon become useless.

Some of the porticos have no platforms; they are very incomplete for a large number of pupils, say forty. It is above all incomplete in scaling. Where can twenty pupils be placed on the top of the portico, if there are no platforms? Besides, the cost of adding them is trifling in comparison with that of another instrument.

The rigging of the portico here given consists of:—

a. a., Fixed Poles for Climbing.
b, Ladders.
c. i., Oscillating Poles.
d. Spoked Pole.
e. Bois-Rozé's Ladder.
f. Smooth Rope.
g. Rings.
h. Amoros's Ladder.
k. Knotted Rope.
p. Trapezium.
m. Rope Ladder.
o. Head Rope.

The dimensions given for each instrument are those best adapted to the ease and safety of the pupils, according to my experience gained in many years' practice. I have had in view the solidity, durability, and usefulness of each instrument, and recommended them accordingly. If the poles or ropes are rather large for some of the pupils, they will not cut their hands, and are easier for practice.

There must be a bed of fine sand, extending eight feet beyond the portico all round, which must always be stirred before the exercises commence. The immense advantage of out-door exercises is, that, if a fall should unfortunately happen, serious consequences are prevented; besides this, the mixture of heat, dust gas, and perspiration in the air of a room, has not a very salutary influence on the lungs of the pupils. When exercising, our lungs should always have a fresh supply of pure air. Our body, being hardened by constant practice, has no fear of cold or wind. Rain is not good; no practice can be done in the rain, but snow is always welcome, although not exactly convenient for exercises on the portico.

In large establishments, the portico and other instruments can be covered with a roof; in that case, gymnastic exercises can be practised daily, regardless of the weather.

No. 17. *Ladders:*

The best hard and well-grained wood is used for this instrument. It is true that the sides of my ladders are heavy, but the pupils will readily perceive, when exercising on them, the advantage of this, by not hurting their hands on them; and we know that light ladders cannot always be used in case of emergency.

No. 18. *Iron Hook,*

Must be made, according to the drawings, of the best materials, and by a careful and skillful workman. The hook is one of the most important of the instruments, and no precaution should be spared in their manufacture.

No. 19. *Movable Stirrup:*

The rope used in this instrument is only half an inch in diameter, the round is made of hard-wood.

No. 20. *Horizontal Spar,*

Is made of pine wood, and elevated about two feet from the ground. It is for the practice of equilibrium.

No. 21. *Amoros's Hooks:*

The construction of these instruments is very important: the hooks are made of the best iron, pointed with steel. They should be made by mechanics of high reputation as workmen.

No. 22. *The Windlass,*

Will be used only in large establishments having sufficient space for the different machinery and instruments. The same precaution must be taken for its iron work as for the hooks.

No. 23. *A Log,*

Answers the same purpose as a horizontal spar, and can have the supports unequal in height.

No. 24. *Block,*

Is made of the dimensions given, and only used in Amoros's Ladder.

PLATE III.

No. 25. *Grooved Boards,*

Are made of pine wood, according to the dimensions given.

No. 26. *Movable Parallel Bars,*

Are among the principal instruments in a Gymnasium. They should be made with care and precision. The supports may be of hard-wood, or of the best southern pine; the bars must always be of hard-wood.

No. 27. *Fixed Parallel Bars,*

Should be constructed with great care and neat workmanship. Those for young pupils may be of from nine to twelve feet in length, with only two supports at each end; in large Gymnasia they may be of from sixteen to twenty feet in length, in which case three supports will be required at each side. The greatest distance outside is two feet one inch for grown persons; but it should not be less than sixteen inches for the youngest pupils.

No. 28. *Circles of Stones and Pickets:*

Any hard-wood will answer for the construction of pickets; the stones should be of nearly an equal height. No particular attention need be paid to the finish of the work; the pickets must be steady in the ground.

No. 29. *Suspension Bars:*

This very valuable instrument can be built in large gymnastic establishments only. Its importance is next to that of the portico, and in many instances is the only instrument used in a family Gymnasium. I here give a description of an isolated suspension bar:

Two thick boards of hard-wood, or of the best pine-wood, say six inches by three, and nine feet long, should be fixed six feet apart, and three feet in the ground. In each of these boards are holes to pass the bars through. The number of holes varies according to the quality of the wood, and the strength of the pupils exercising on it. If the supports are of hard-wood, they may be constructed like those of the movable parallel bars. This instrument is so useful, and at the same time so cheap, that I may venture to say each family will have one. The pupils, who cannot attend the Gymnasium, may practise at home and be greatly benefited in their health.

Nos. 30 & 34. *Dynamometers,*

Are indispensable instruments in a good Gymnasium, showing the effects of practice, the strength acquired, and the progressive development of the whole system. The difficulty of procuring them in this country is the reason why such useful instruments are not seen in Gymnasia. I import them direct from Paris.

No. 31. *Oscillating Spar,*

Made of pine-wood: the length of the rope from the hook to the spar is twelve feet.

No. 32. *Cross-bow,*

Is an excellent instrument to accustom youth to gunning and shooting.

No. 33. *Inclined Parallel Rope:*

The large establishments should possess this valuable instrument; it is one of the easiest to construct. The greatest precaution is necessary for the iron work and hooks.

No. 35. *Board with Holes,*

Is made of hard-wood, or the best pine, never less than two inches thick; the holes one foot apart. This instrument is always in a more or less inclined position.

No. 36. *Spar with Holes,*

Is made of any kind of wood, the holes one foot apart for grown pupils. This instrument is placed vertically.

PLATE IV.

No. 37. *Masts:*

Masts are of various heights. They should be about twenty feet high for young pupils, and thirty for adults. Four masts of different sizes may be placed together; the largest being ten inches, and the smallest five inches in diameter at the foot; the tops must be at least three inches in diameter. They should be made of hard-wood; the pine would be affected by the weather.

The upper ends of these masts are to be fastened together by iron cross-bars. At the top of each mast there should be a pulley with a rope passing through it, one end of which rope may be attached to the belt-ring, in order to aid the timid and feeble to climb. There also may be holes covered with iron or tin, to receive little standards or prizes, to incite emulation, to take away the fear of difficulties which all feel at first, and to draw the attention from the pain which may be felt in the legs and muscles.

No. 38. *Ditch:*

Its dimensions in depth and breadth should be regulated by the age of the pupils.

No. 39. *Vaulting Horizontal Spars:*

A Gymnasium, possessing this machine, of which the plate shows the exact working scale, may dispense with the jumping-table.

All the sharp edges of gymnastic instruments must be taken off.

COURSE OF INSTRUCTION.

Name of the pupil, - - - -	
Birth-place, - - - - - -	
Age, (years, months,) - - - -	
Structure of the body, - - - -	
Color of the face, - - - - -	
Eyes, - - - - - - - -	
Hair, - - - - - - - -	
Shape, - - - - - - - -	
Temperament, - - - - -	
Health, - - - - - - -	
Character, - - - - - -	
Inclination for the exercises, - -	
Disposition for singing, - - - -	
Quality of voice, - - - - -	
Weight, (pounds,) - - - -	

MEASURE.

It is very necessary to have this simple instrument in Gymnasia in order to know the growth of the pupils. The height and weight of each pupil must be registered by the Instructor, and verified every three months.

	Feet.	Inches.
Height, - - - - - - -		

FORCES MEASURED BY WEIGHT.

Pressure with the hands, - - -	*		
Force of the loins and hands, - -			
Tractive force, - - - - -			
Downward blow with the right fist, -			
do do left fist, -			
Straight-forward blow with both hands,			
do do the right fist,			
do do the left fist,			
Pressure against the chest, - - -			
Weight supported, - . - -			

* The date of the above measurement will be inscribed in the columns, and comparisons made every three months.

APTITUDE FOR EXERCISES.

Strength, - - - - - - -	
Agility, - - - - - - -	
Skill, - - - - - - - -	
Velocity, - - - - - - -	
Industry, - - - - - - -	
Resistance, - - - - - - -	
Courage, - - - - - - -	

Prizes or nominations received which presume the good conduct or proficiency in the exercises.

Moral influence of the exercises on the sentiments and intelligence of the pupil.

Pugilism, or boxing, is banished from the gymnastic exercises as immoral and brutalizing. Gymnastics teach all that is necessary for self-defence in case of necessity.

Fig. 1.

Fig. 2.

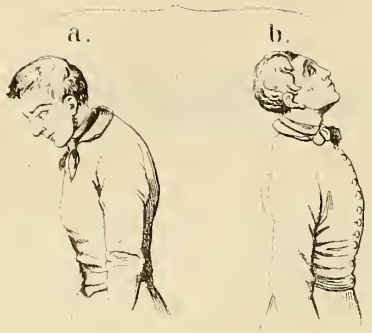

Fig. 3.

Fig. 4.

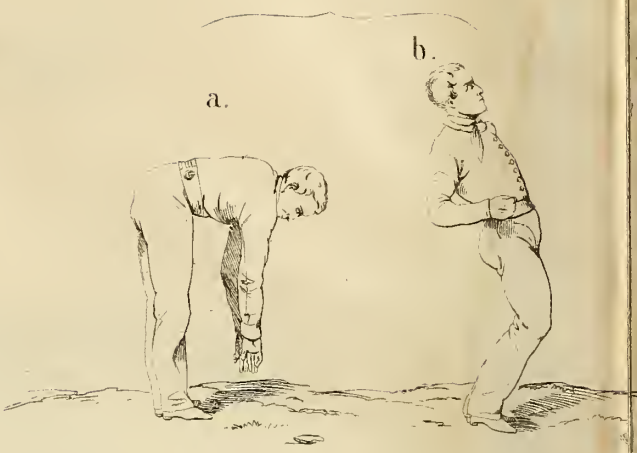

Fig. 9.

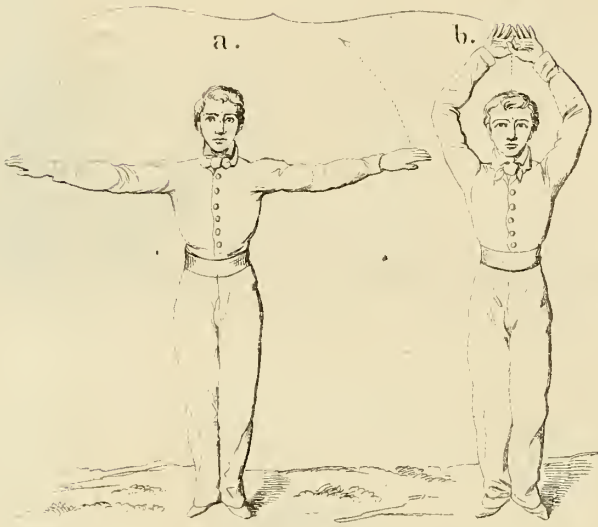

Fig. 10.

Fig. 11.

Fig. 12.

Fig. 13.

Fig. 19.

Fig. 20.

Fig. 21

Fig. 22.

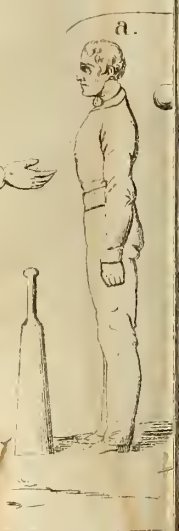

Fig. 5. Fig. 6. Fig. 7. Fig. 8.

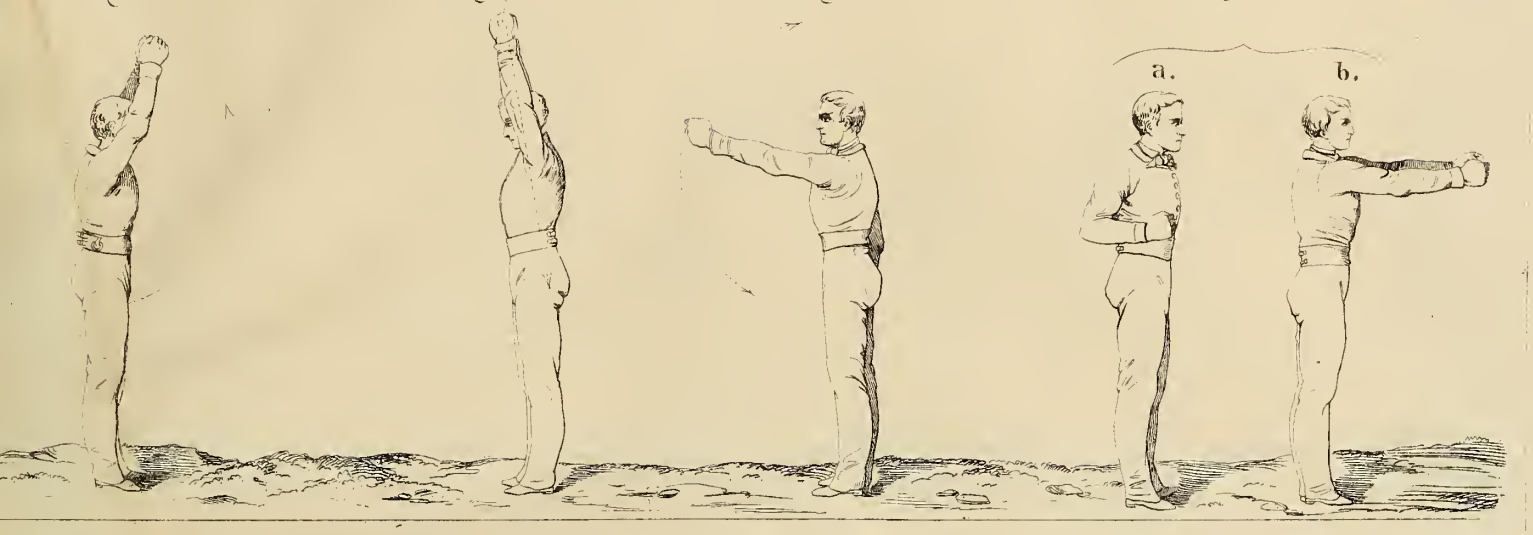

Fig. 14. Fig. 15. Fig. 16. Fig. 17. Fig. 18.

3. Fig. 24. Fig. 25. Fig. 26. Fig. 27.

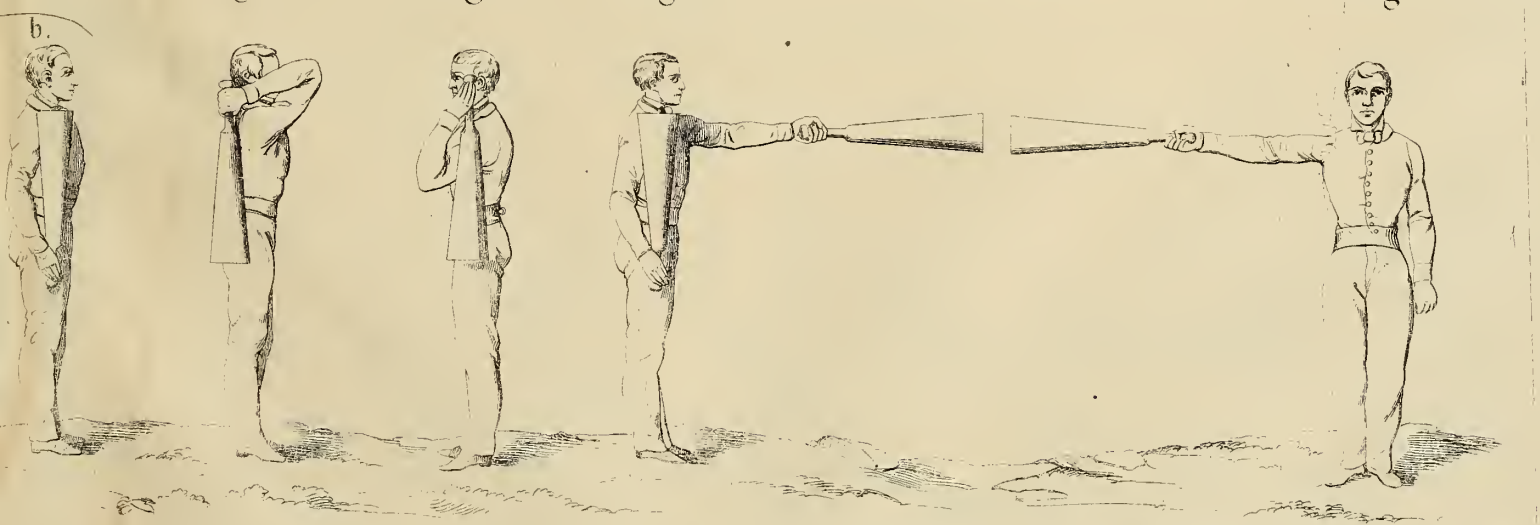

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Fig. 1.

Fig. 2.

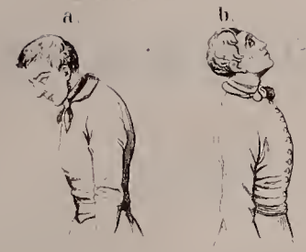

Fig. 3.

Fig. 4.

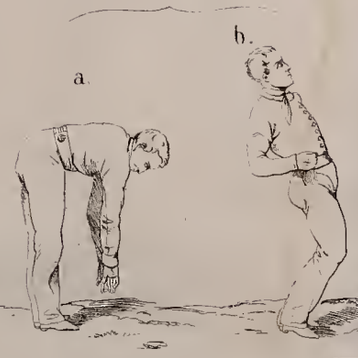

Fig. 5.

Fig. 6.

Fig. 7.

Fig. 8.

Fig. 9.

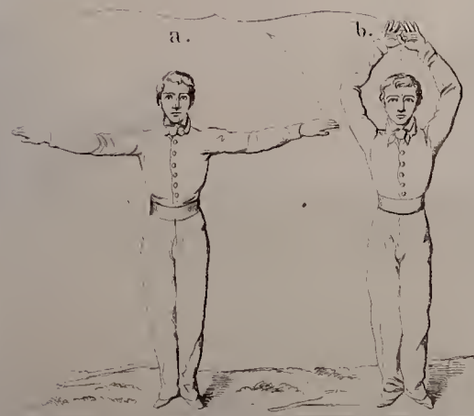

Fig. 10.

Fig. 11.

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Fig. 20.

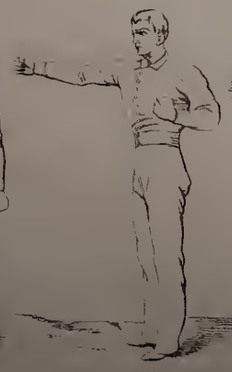
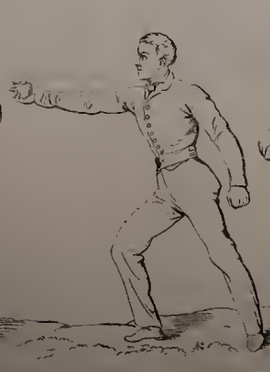


Fig. 21



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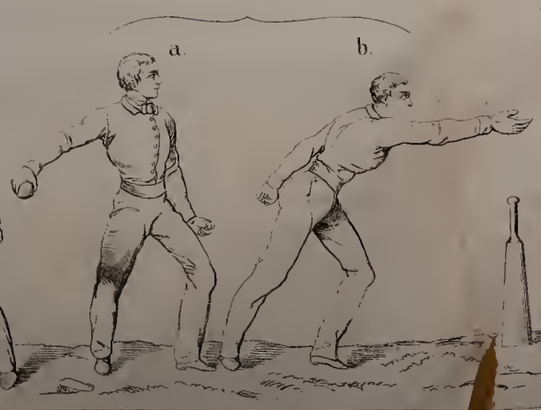

Fig. 23.

Fig. 24.

Fig. 25.

Fig. 26.

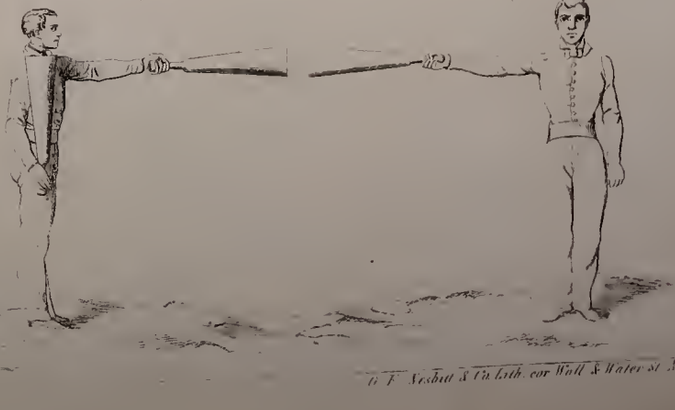

Fig. 27.

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Fig. 28. Fig. 29. Fig. 30. Fig. 31. Fig. 32.

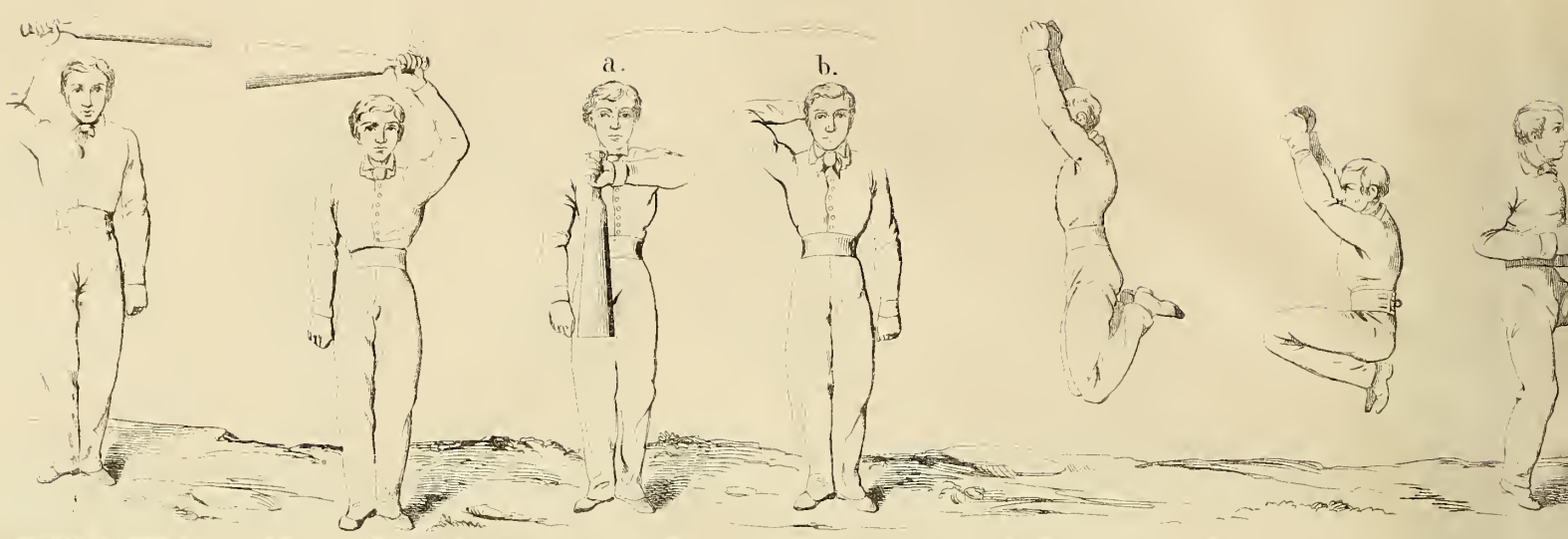

Fig. 37. Fig. 38.

Fig. 41. Fig. 42.

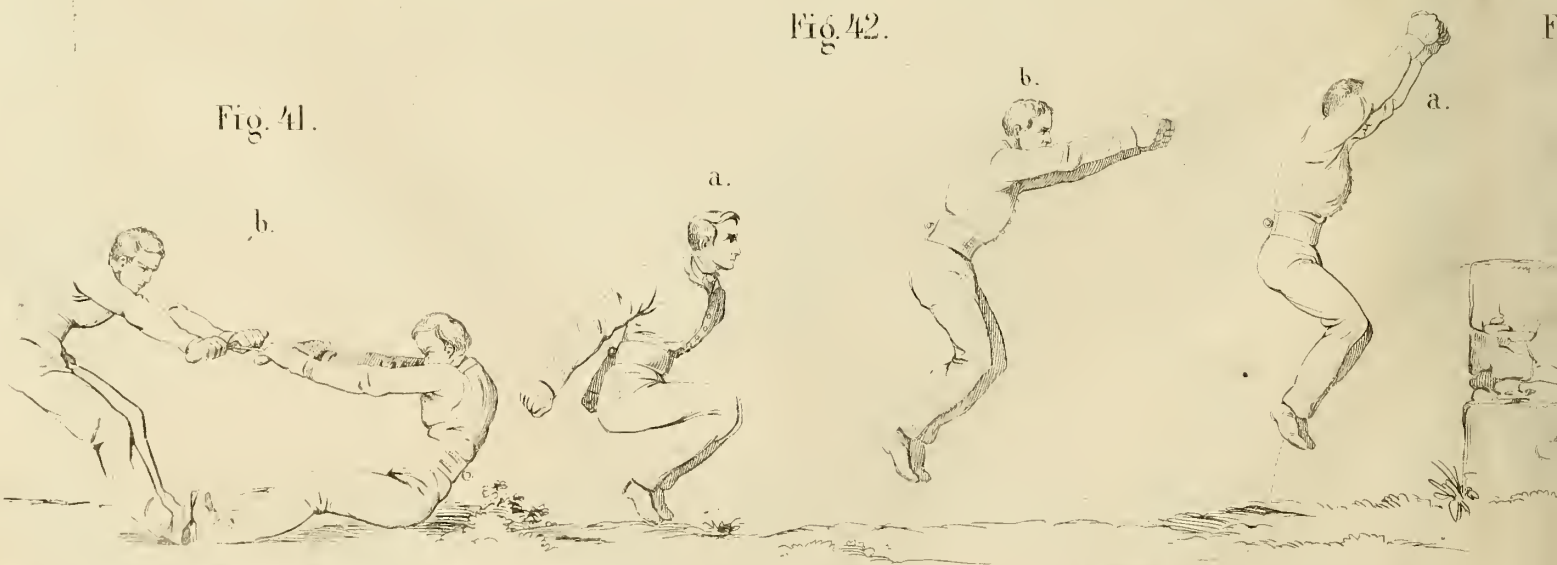

Fig. 34.

Fig. 35.

Fig. 36.

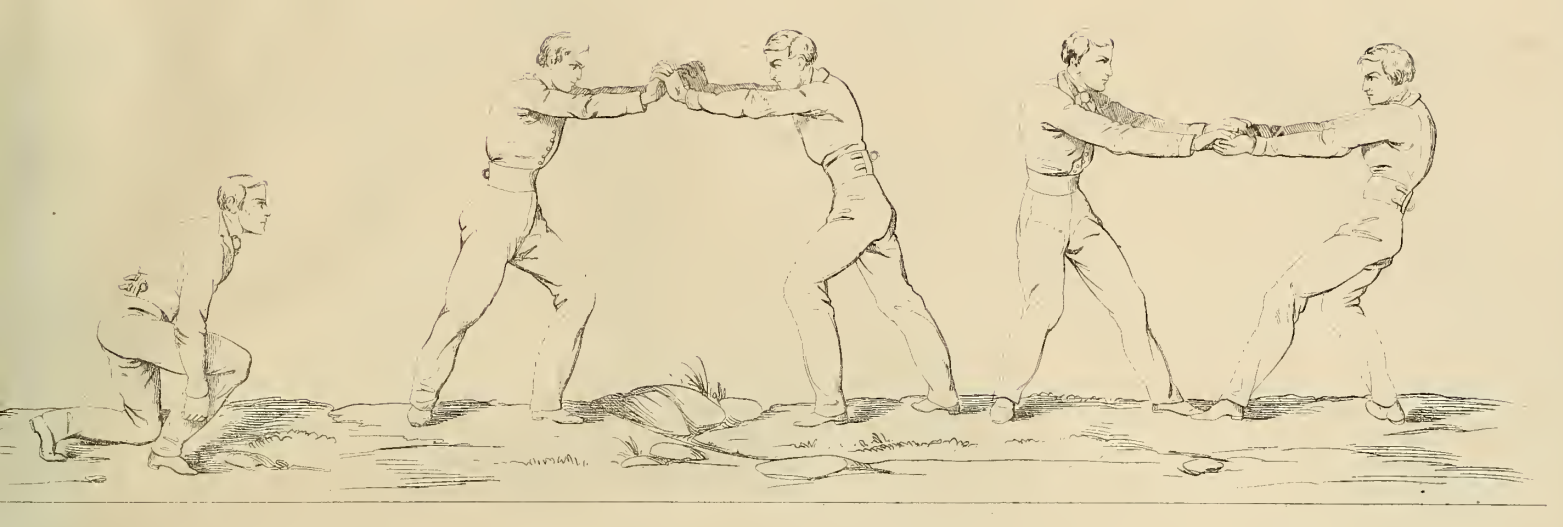

Fig. 40.

Fig. 41.

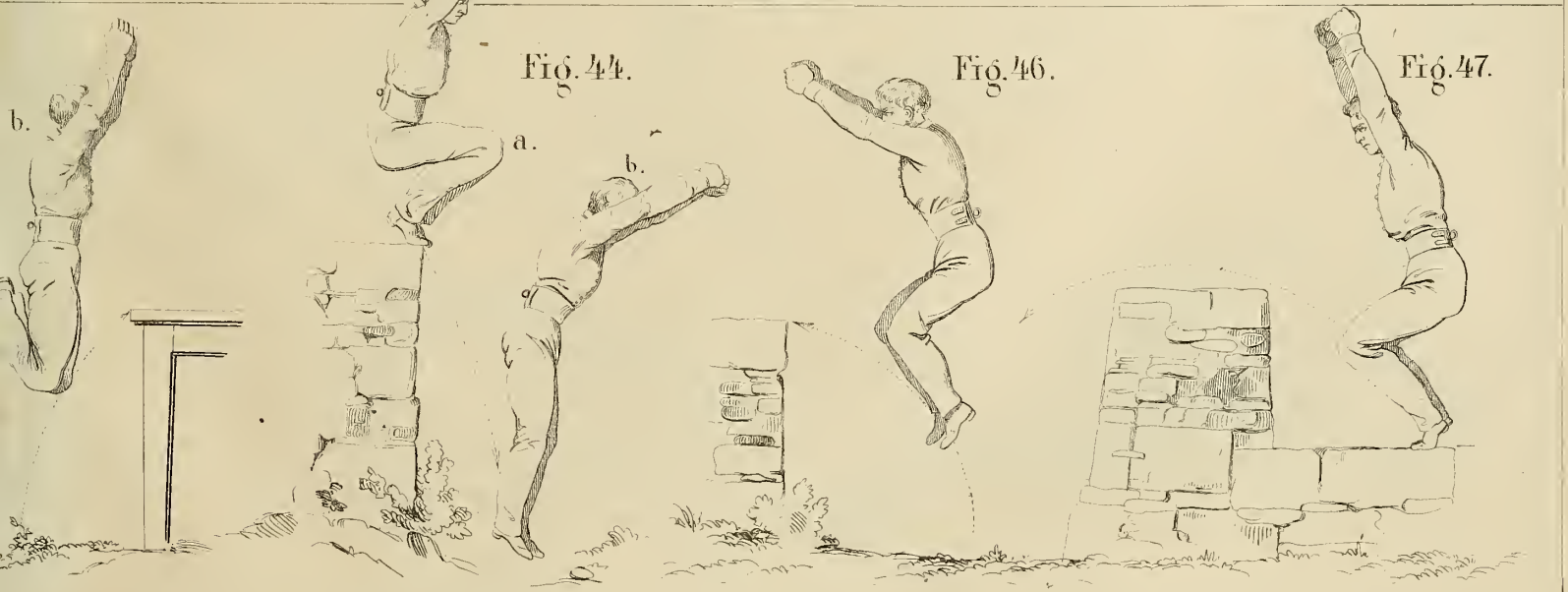

Fig. 44.

Fig. 46.

Fig. 47.

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Fig. 37. Fig. 38. Fig. 39. Fig. 40. Fig. 41.

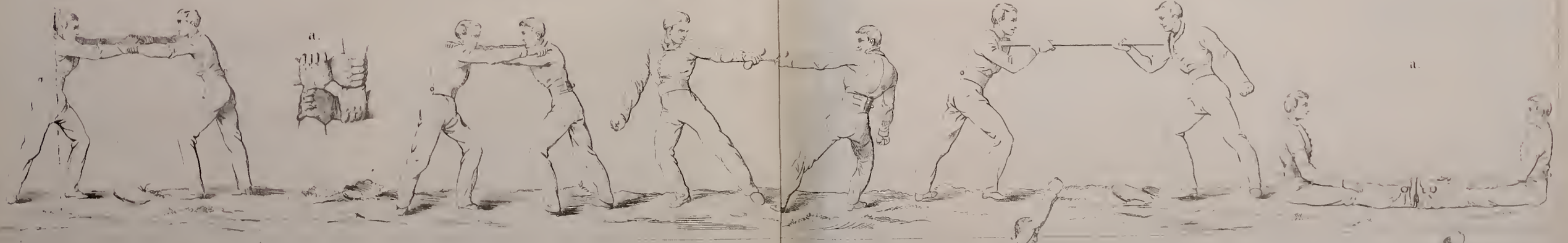
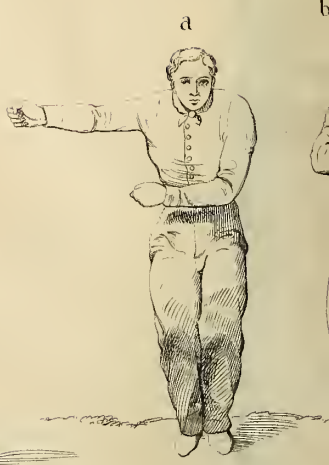


Fig. 41. Fig. 42. Fig. 43. Fig. 44. Fig. 46. Fig. 47.

Fig. 45.

Fig. 48.

Fig. 49.



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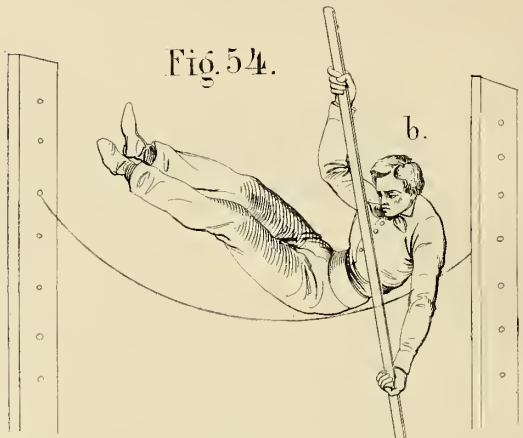


Fig. 55.

Fig. 50.

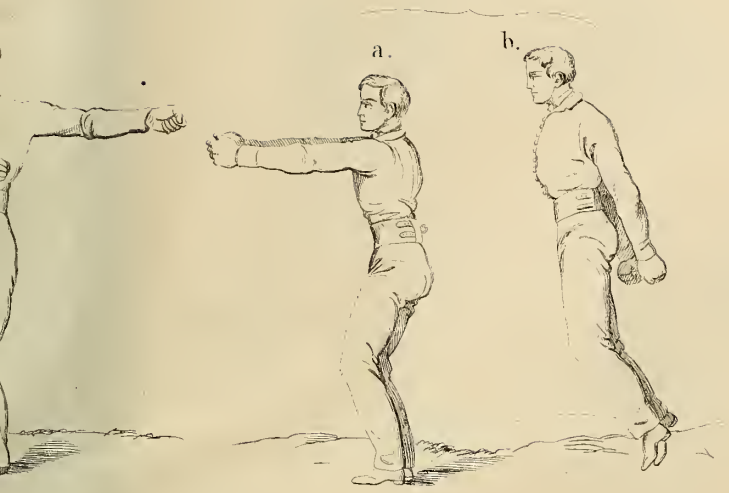
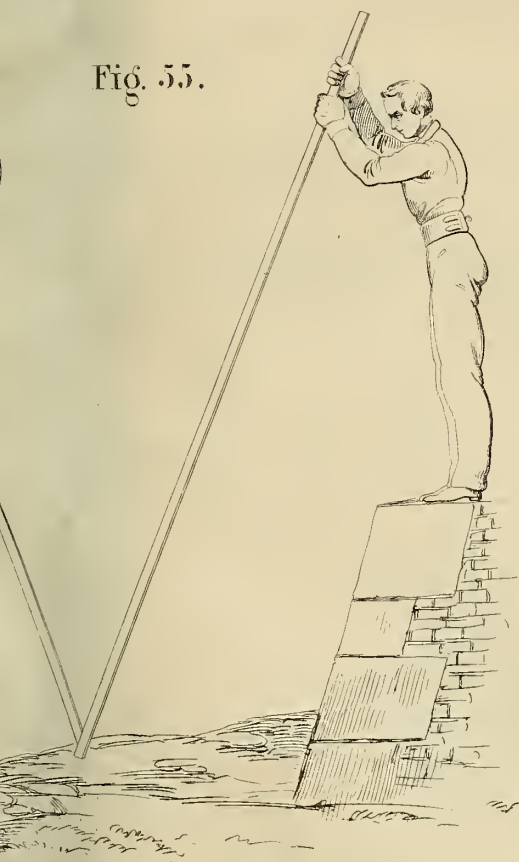


Fig. 51.

Fig. 52.

Fig. 53.



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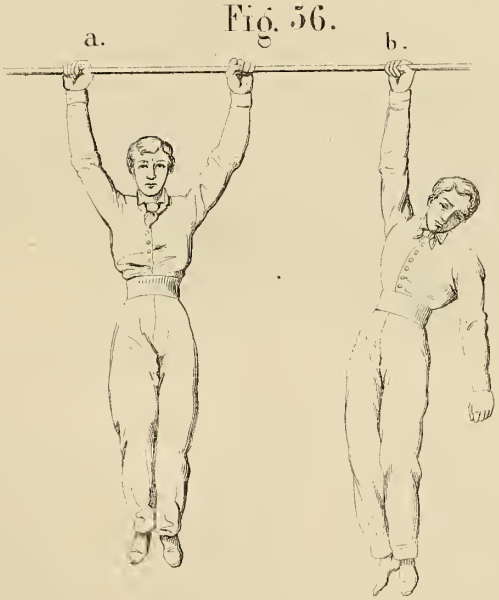
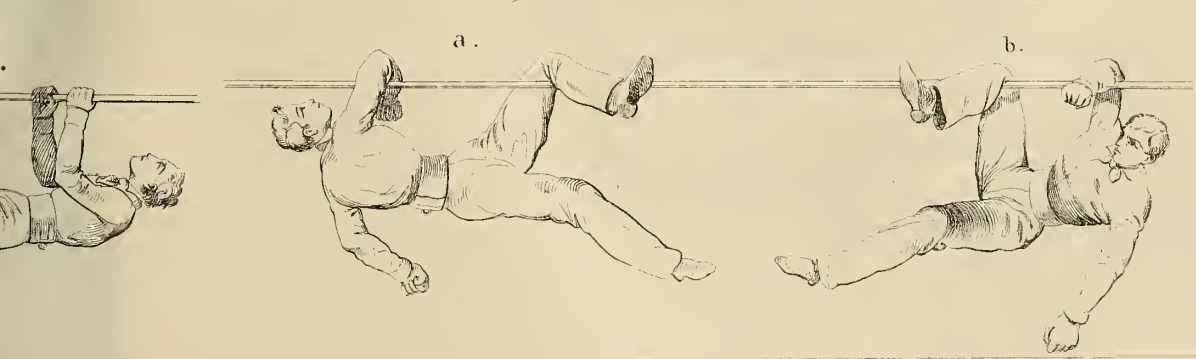


Fig. 57.

Fig. 58.

Fig. 60.



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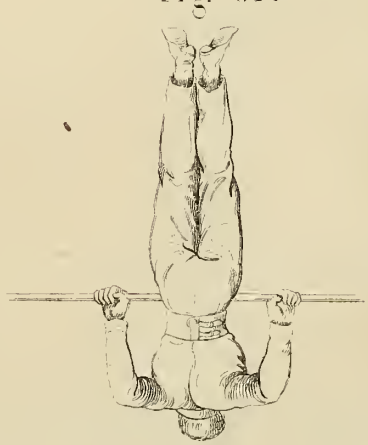


Fig. 45.

Fig. 48.

Fig. 49.

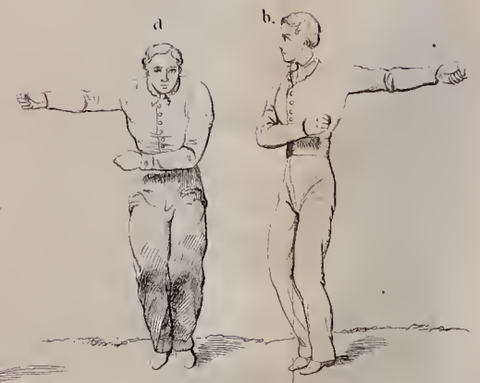
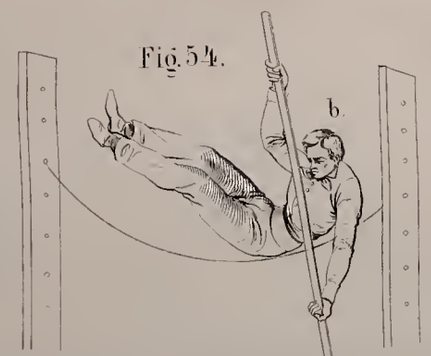


Fig. 50.

Fig. 51.

Fig. 52.

Fig. 54.



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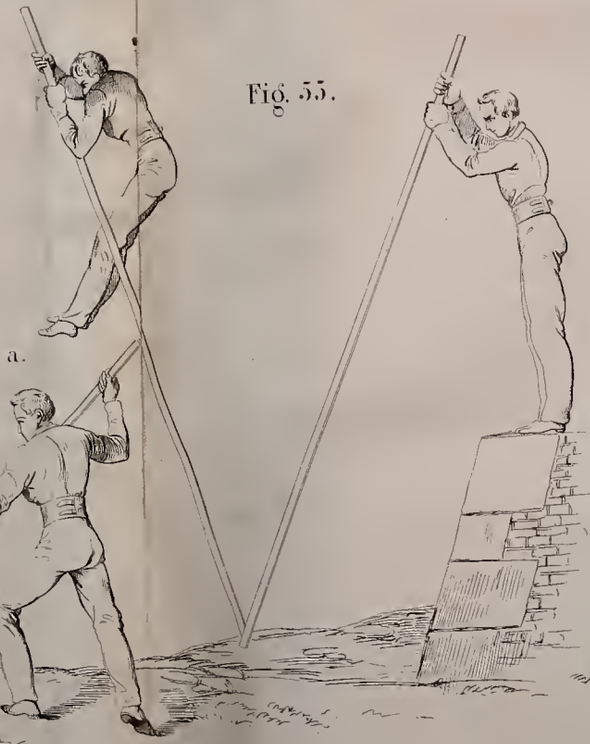

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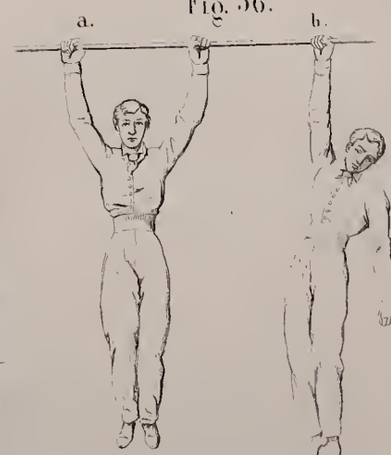

Fig. 57.

Fig. 58.

Fig. 53.

Fig. 59.

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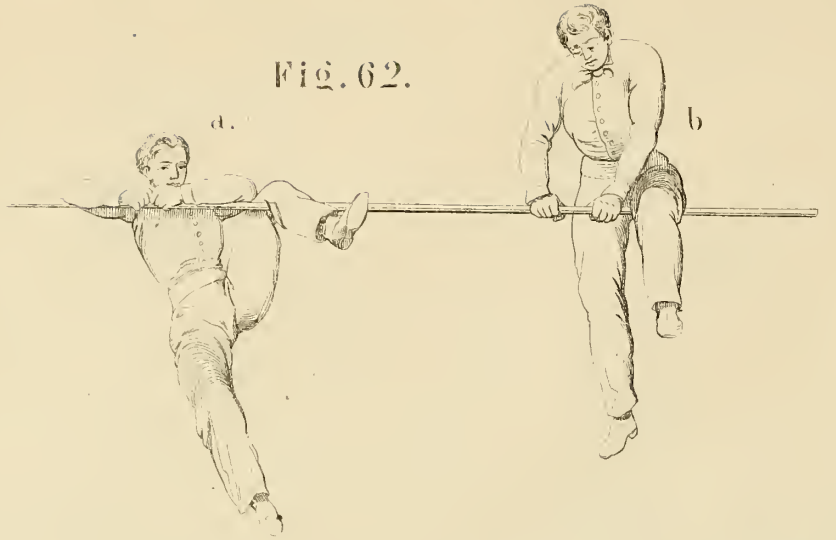
Fig. 62.



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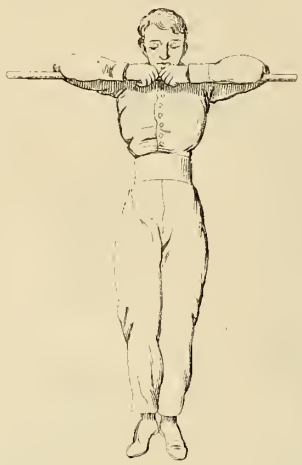


Fig. 64.

Fig. 68.

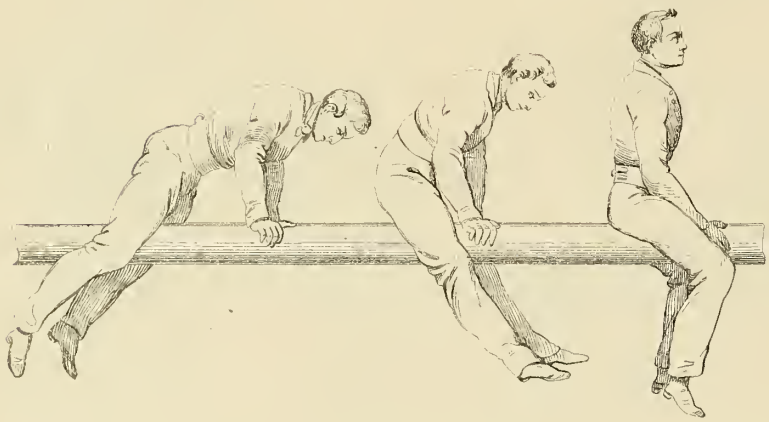


Fig. 69.

Fig 70.

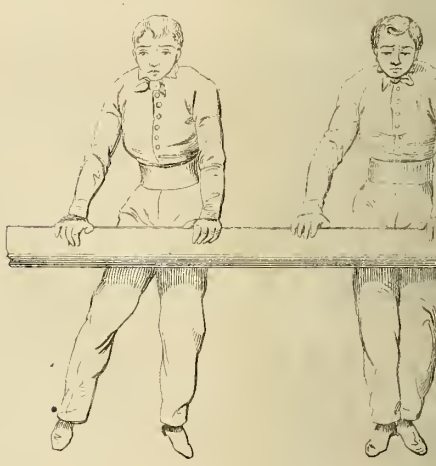
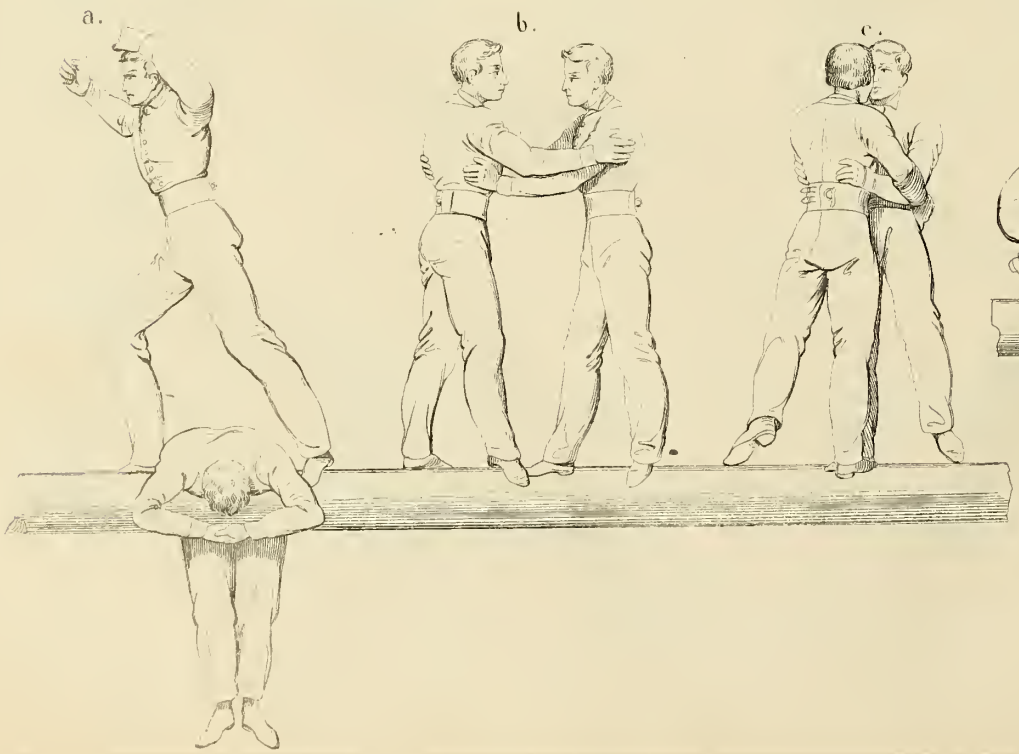


Fig. 71



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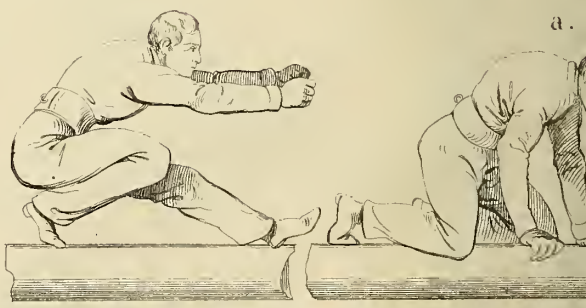


Fig. 7

a. Fig. 65 b.

Fig. 66.

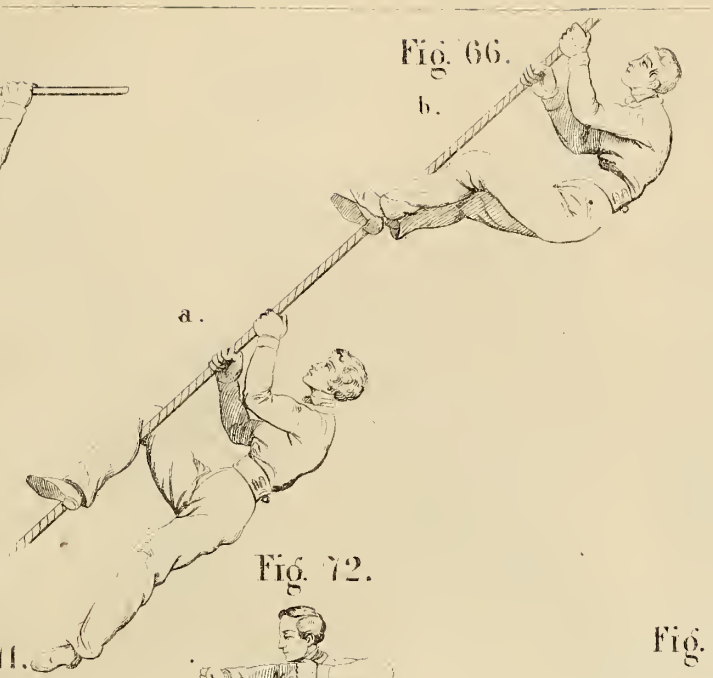


Fig. 67.

Fig. 71.

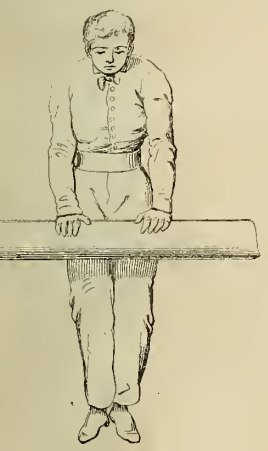
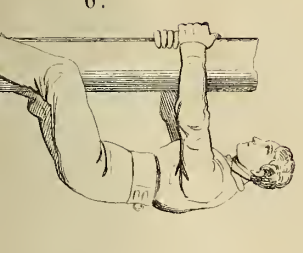


Fig. 72.

Fig. 73.

Fig. 77.



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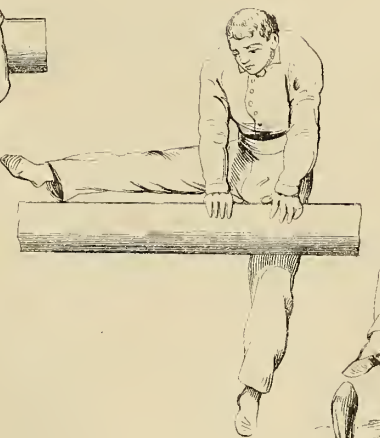
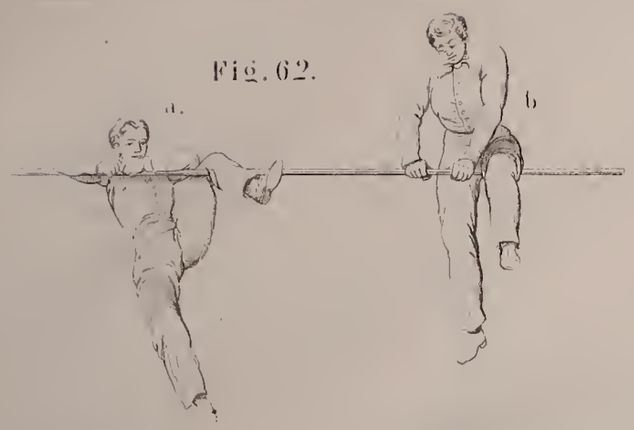


Fig. 79.

Fig. 80.

Fig. 62.



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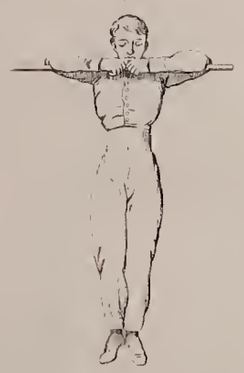
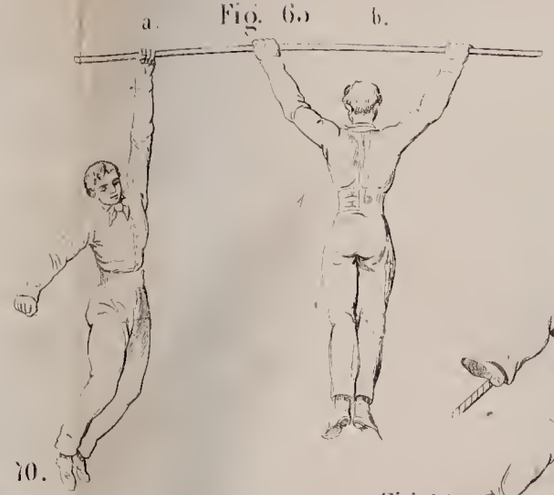


Fig. 64.

Fig. 65



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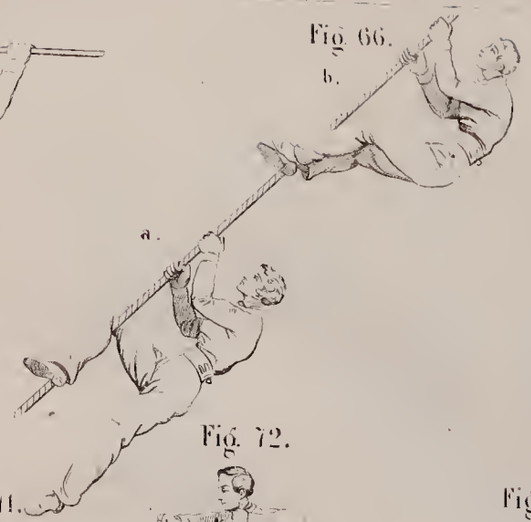

Fig. 67.

Fig. 68.

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Fig. 70.

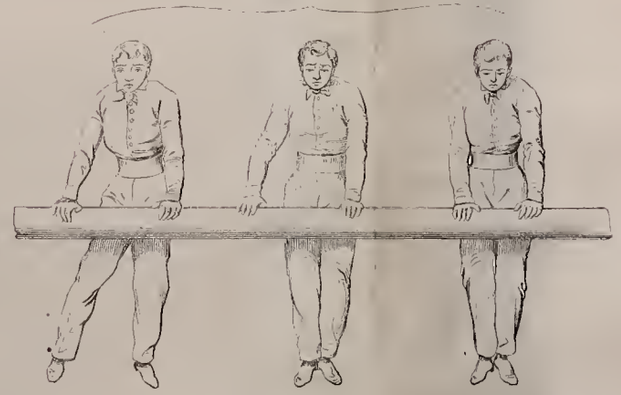

Fig. 71.

Fig. 72.

Fig. 73.

Fig. 74.

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Fig. 76.

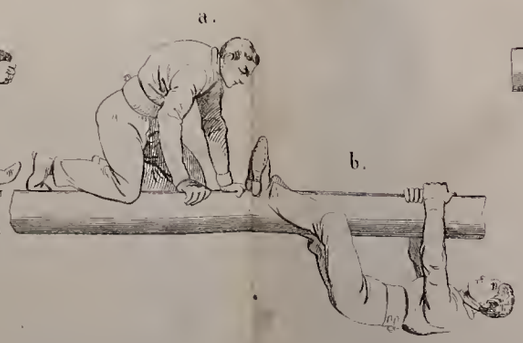

Fig. 77.

Fig. 78.

Fig. 79.

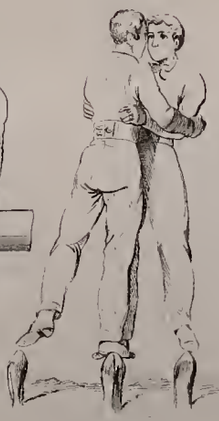

Fig. 80.

Fig.81.

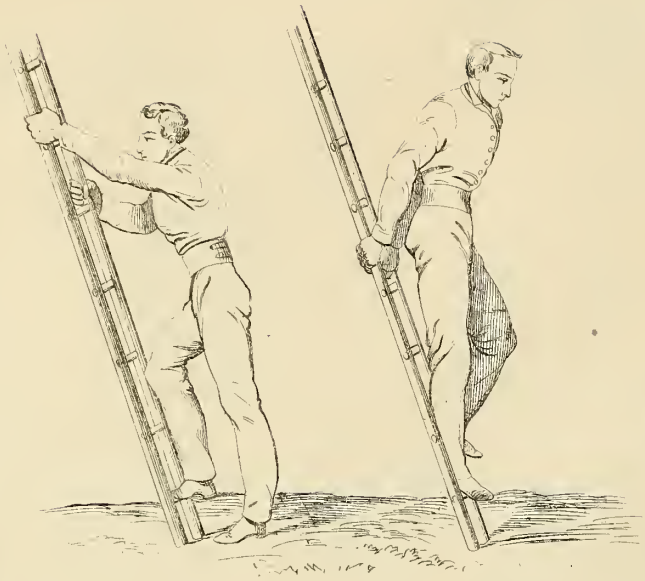

Fig.82.

Fig.83.

Fig.84.

Fig.91.

Fig.90.

Fig.92.

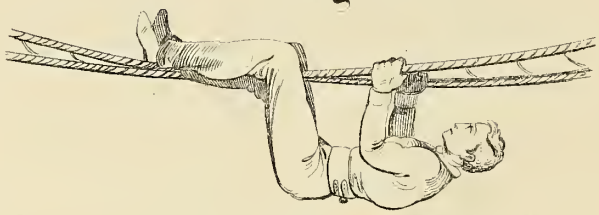

Fig.93.

Fig.99.

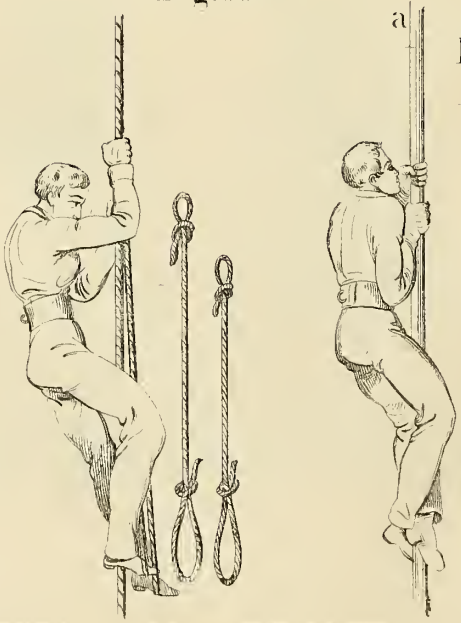

Fig.98.

Fig.100.

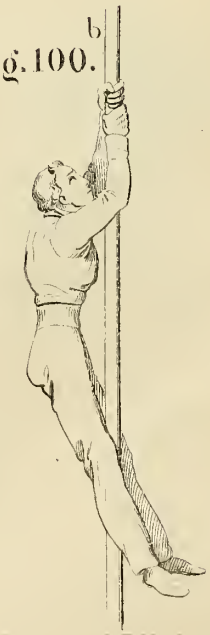

Fig.

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85.

Fig.86.

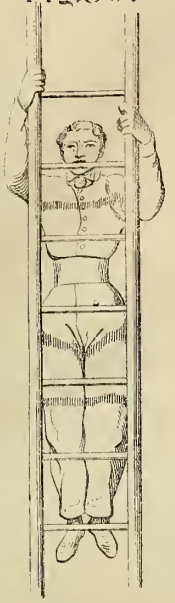
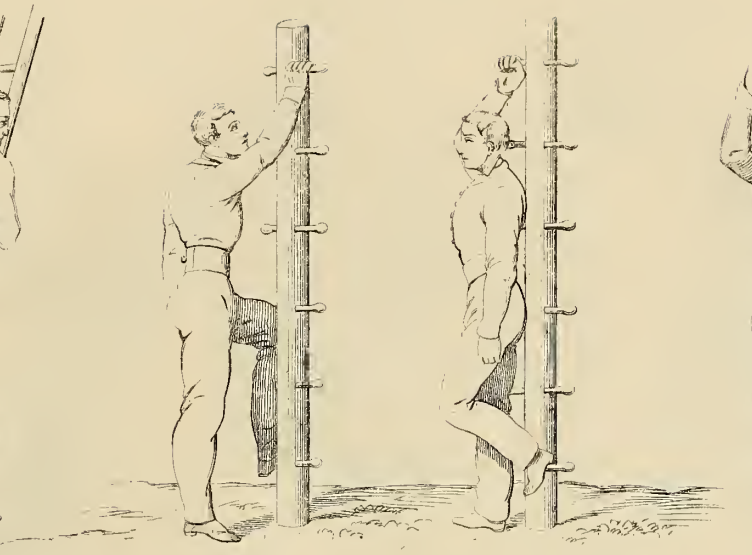


Fig.87.

Fig.88.



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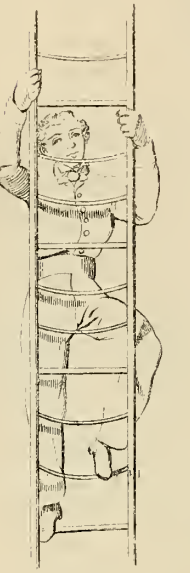

Fig.94.

Fig.95.

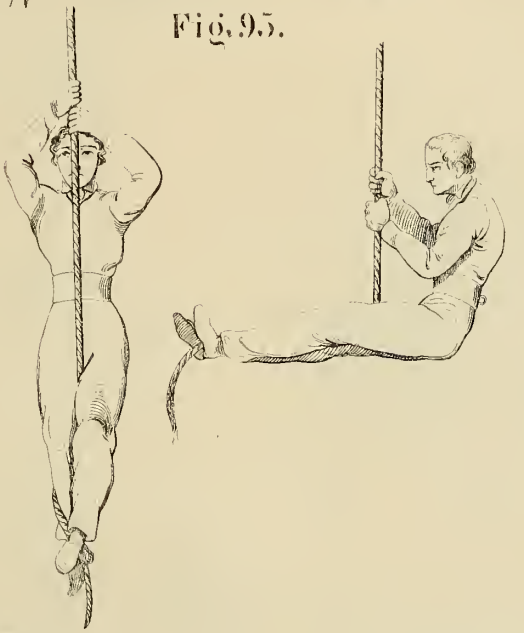

Fig.96.

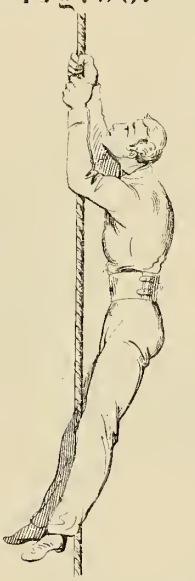

Fig.97.

b

Fig.102.

Fig.103.

Fig.104.

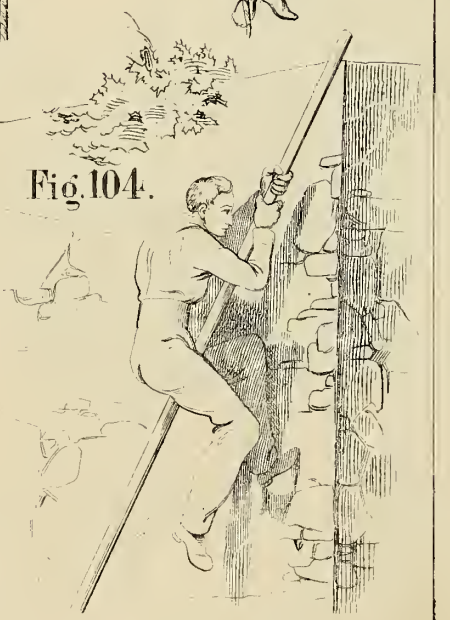

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Fig.81.

Fig.82.

Fig.83.

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Fig.85.

Fig.86.

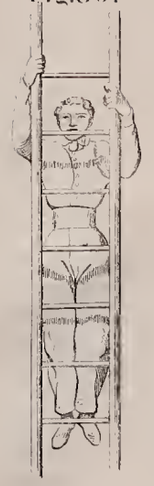

Fig.87.

Fig.88.

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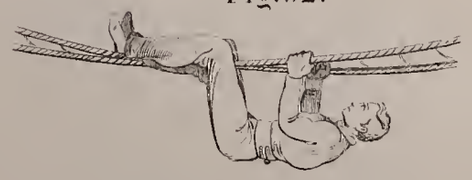
Fig.92.



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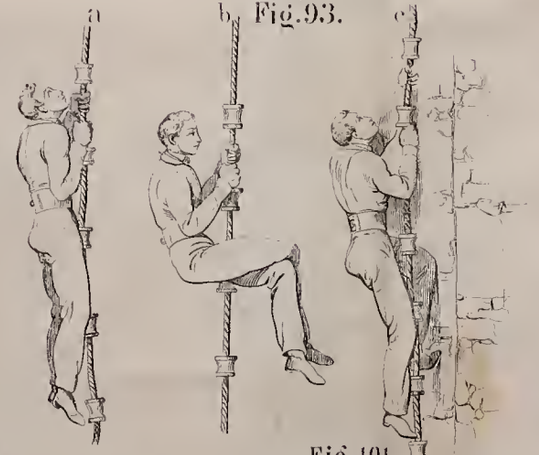

Fig.94.

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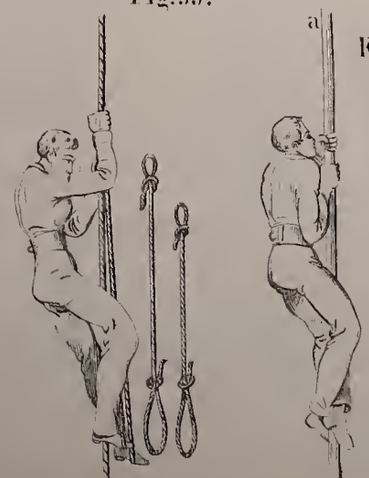

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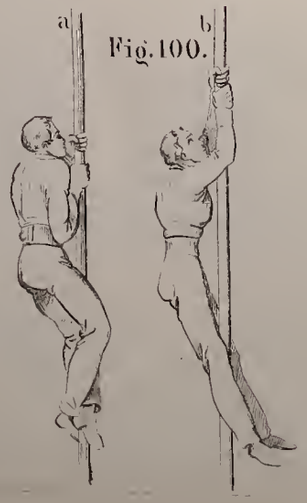

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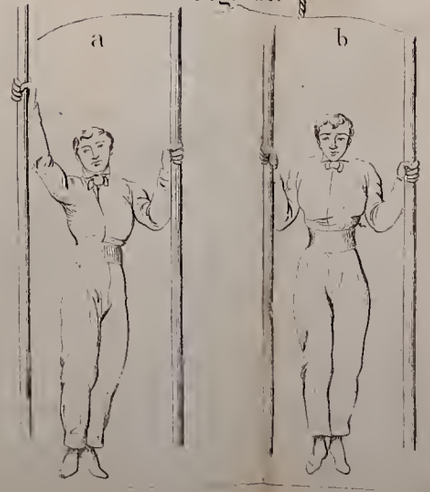
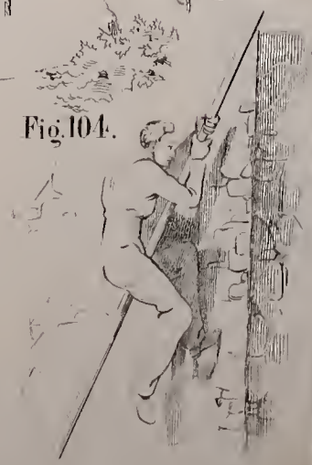


Fig.102.

Fig.103.

Fig.104.



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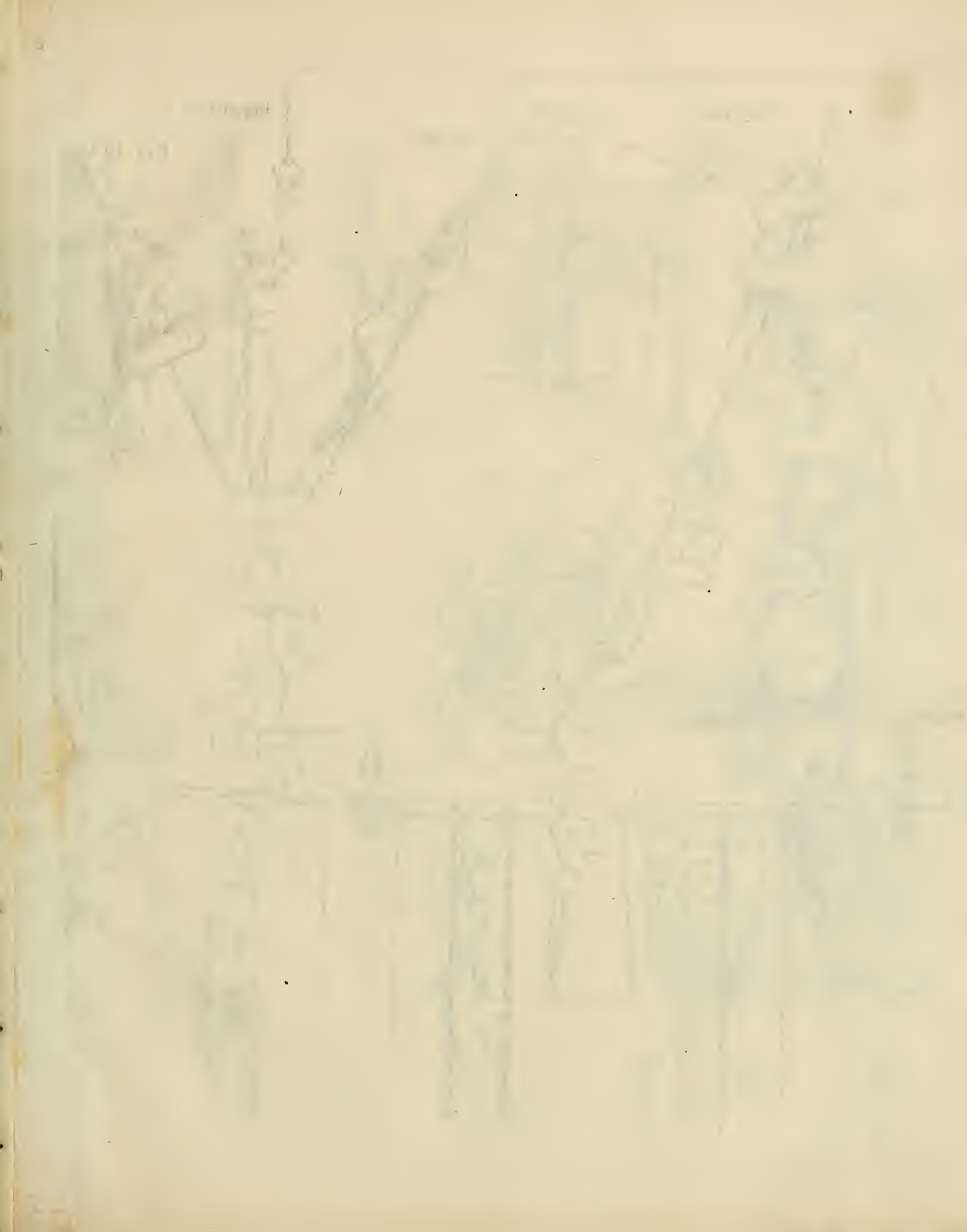


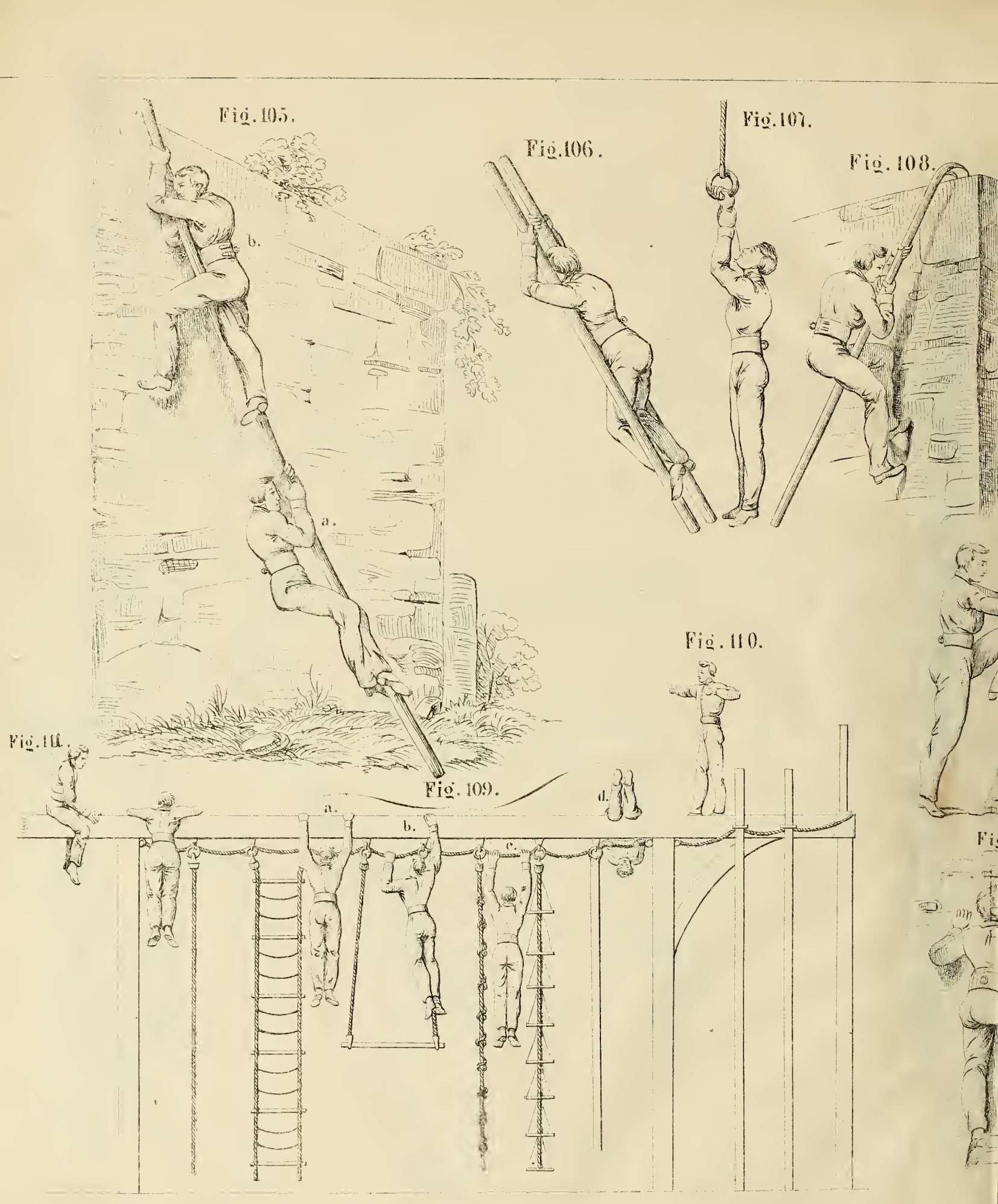
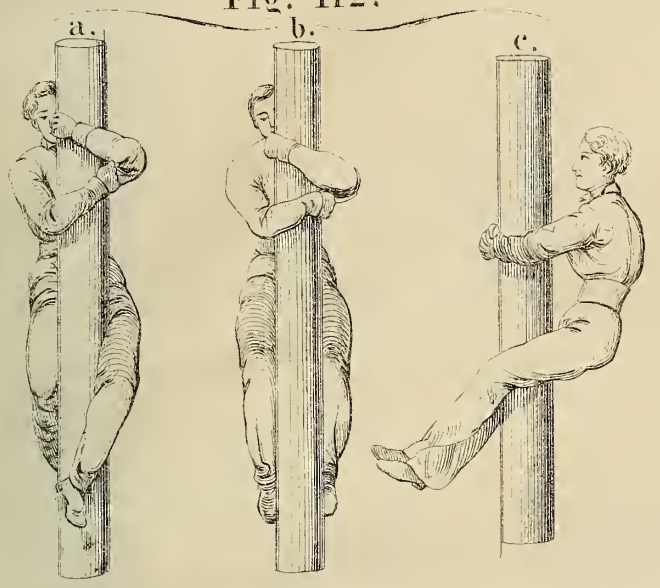


Fig. 105.
b.
a.
Fig. 106.
Fig. 107.
Fig. 108.
Fig. 110.
Fig. 111.
Fig. 109.
a.
b.
c.
d.

Fig. 112.



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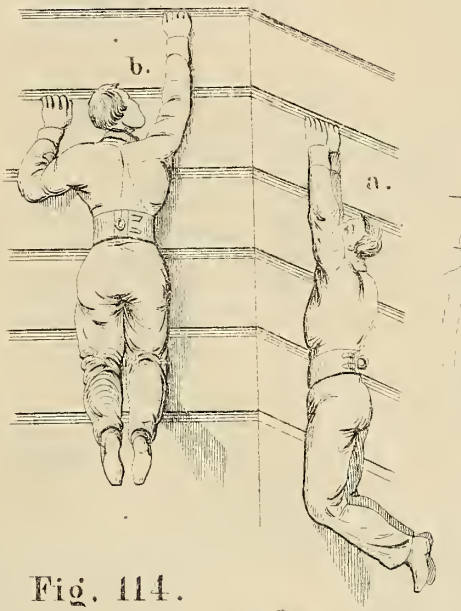

Fig. 118.

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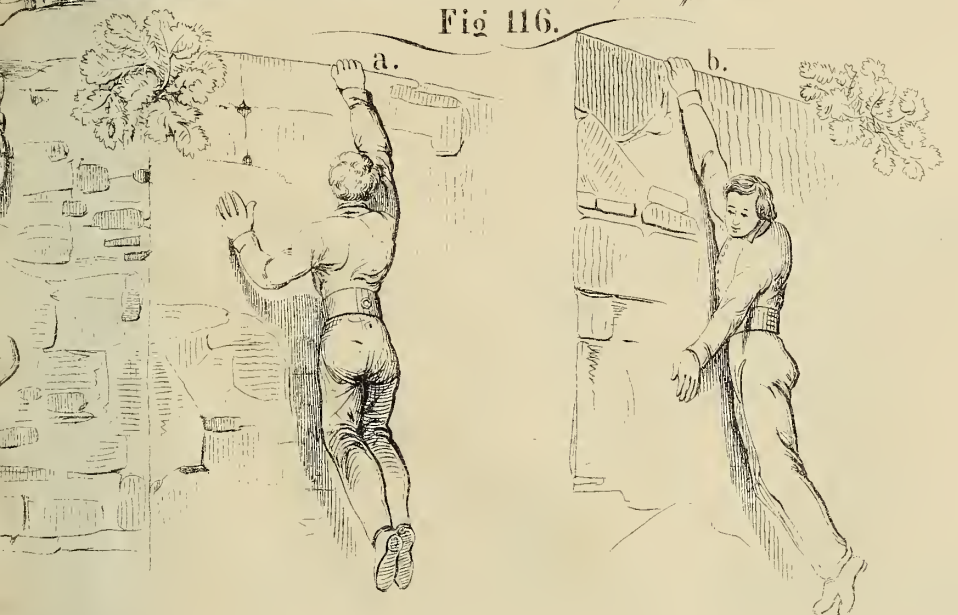
Fig 116.



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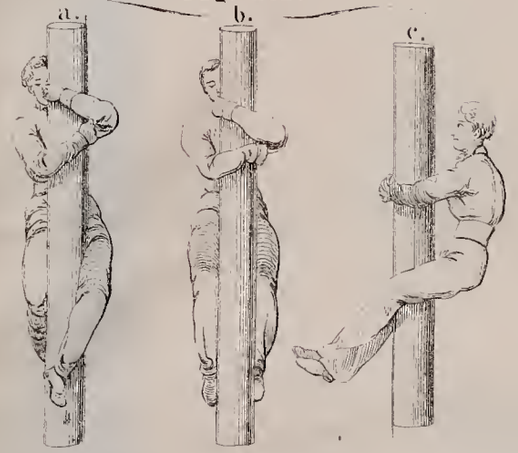

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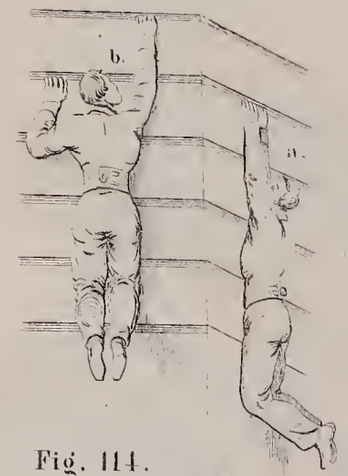

Fig. 118.

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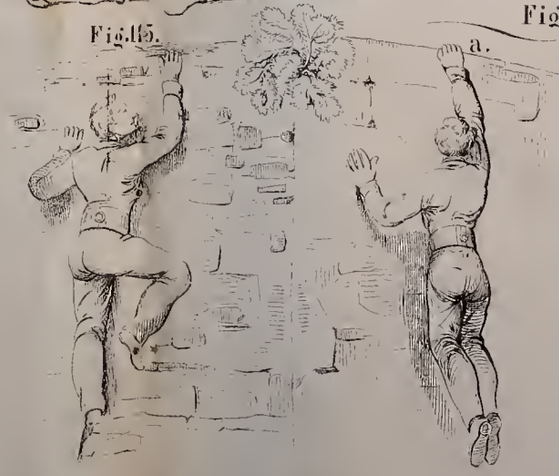

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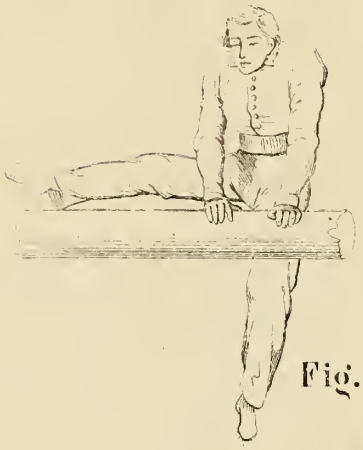
Fig. 120.



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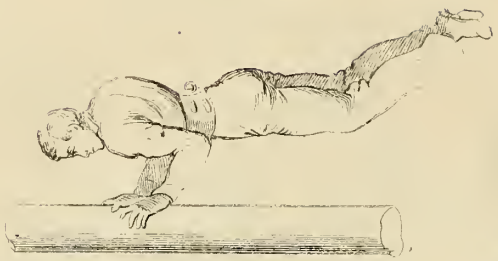

Fig. 122.

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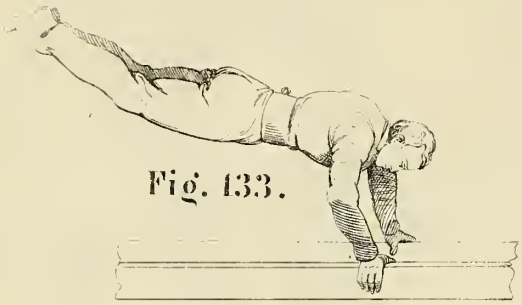
Fig. 131.

Fig. 133.



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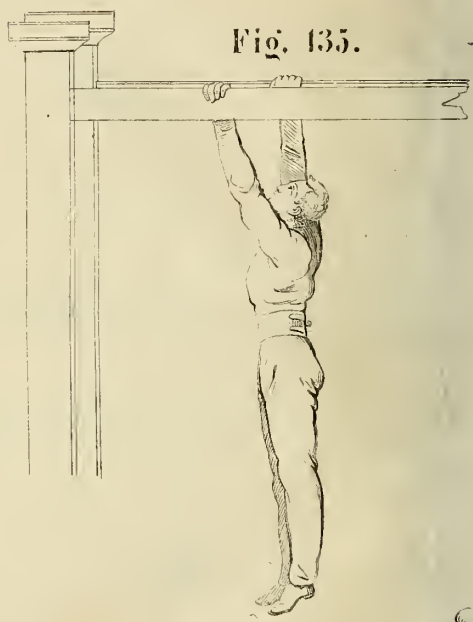

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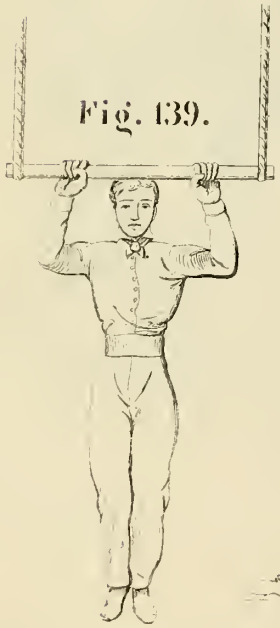

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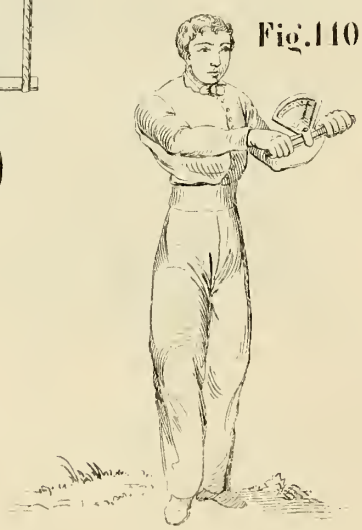

Fig. 111.

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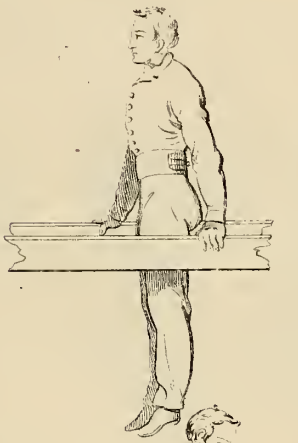

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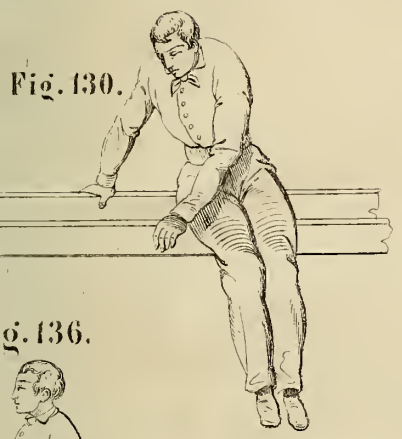

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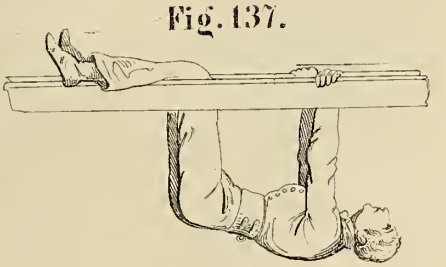

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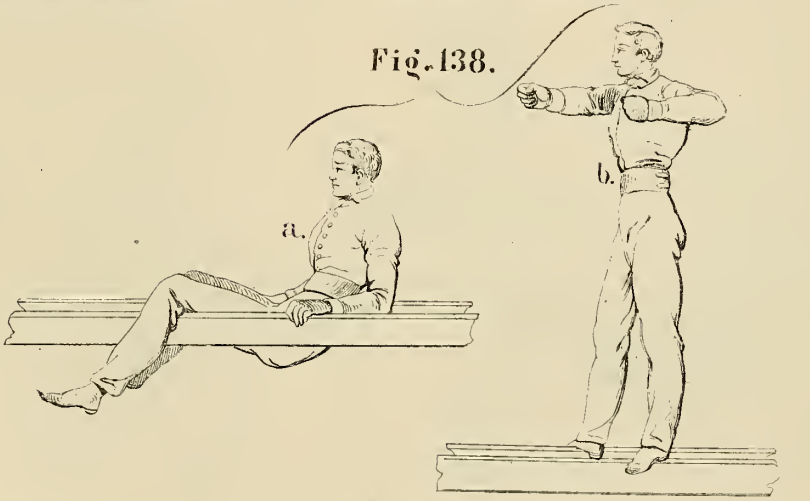
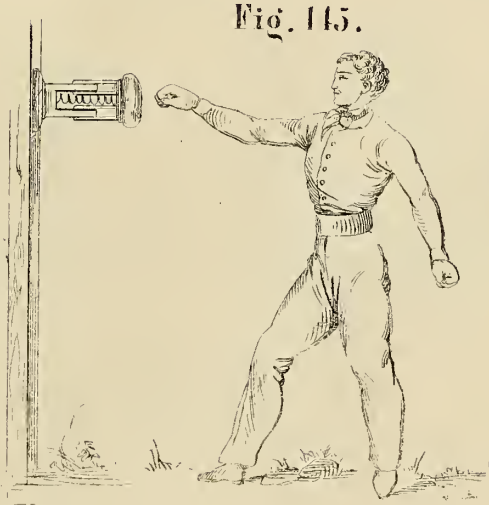


Fig. 113.

Fig. 141.

Fig. 145.



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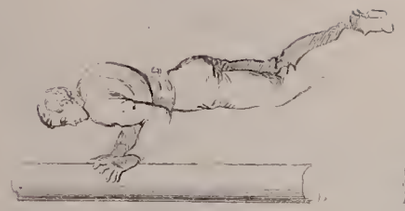

Fig. 122.

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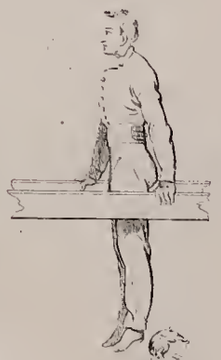

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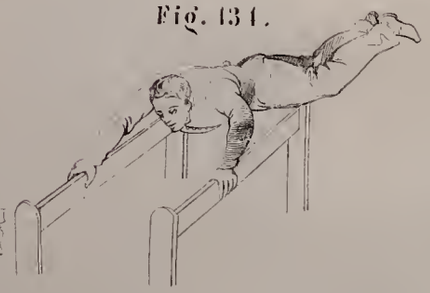

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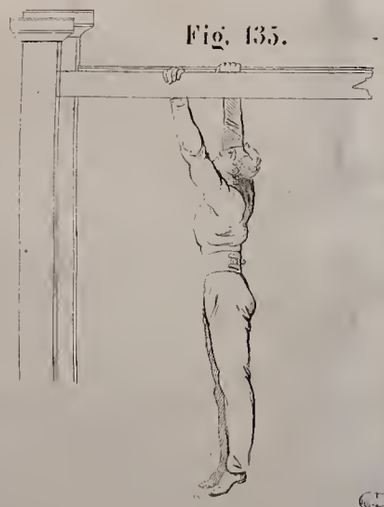

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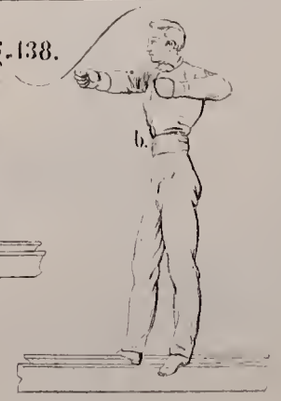

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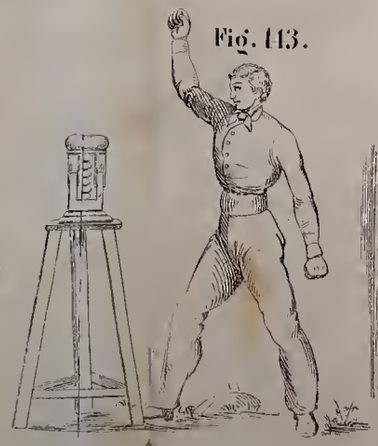

Fig. 144.

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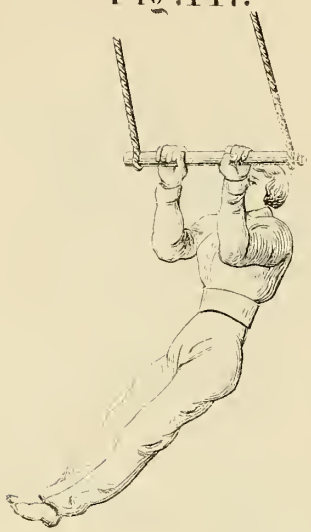

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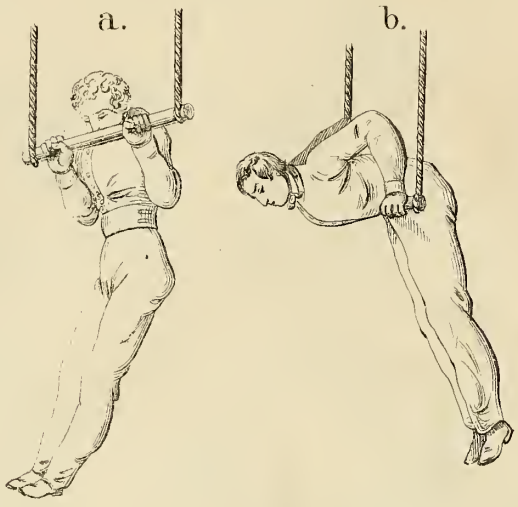

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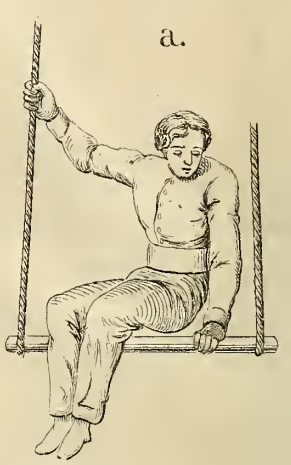

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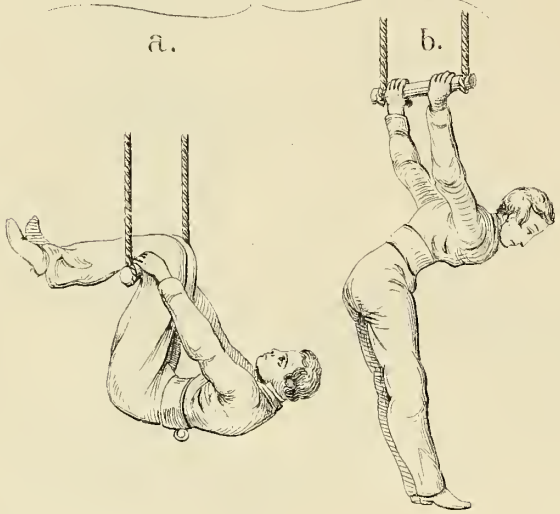

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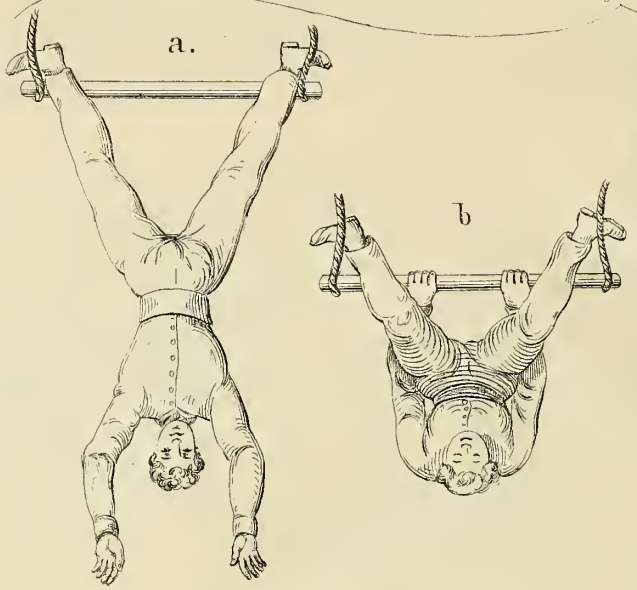

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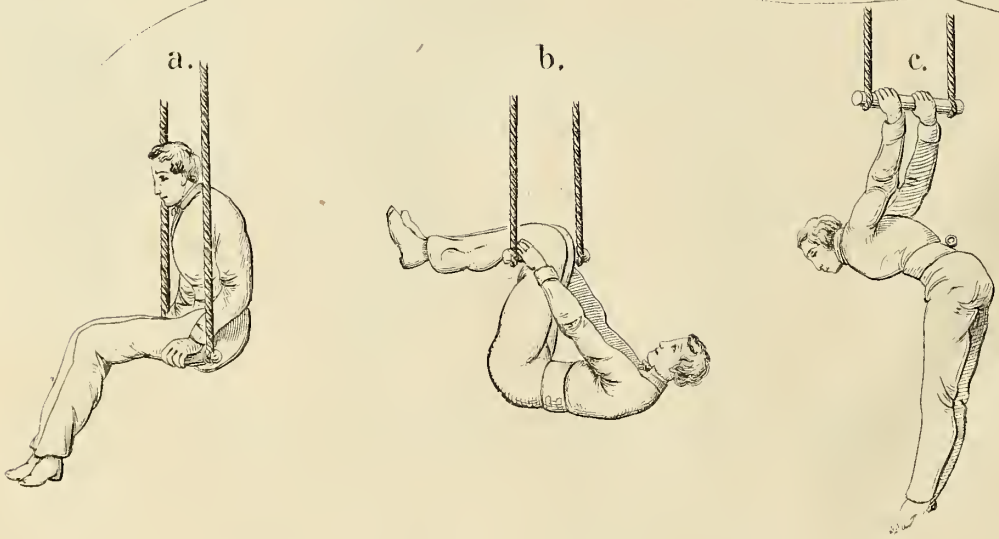

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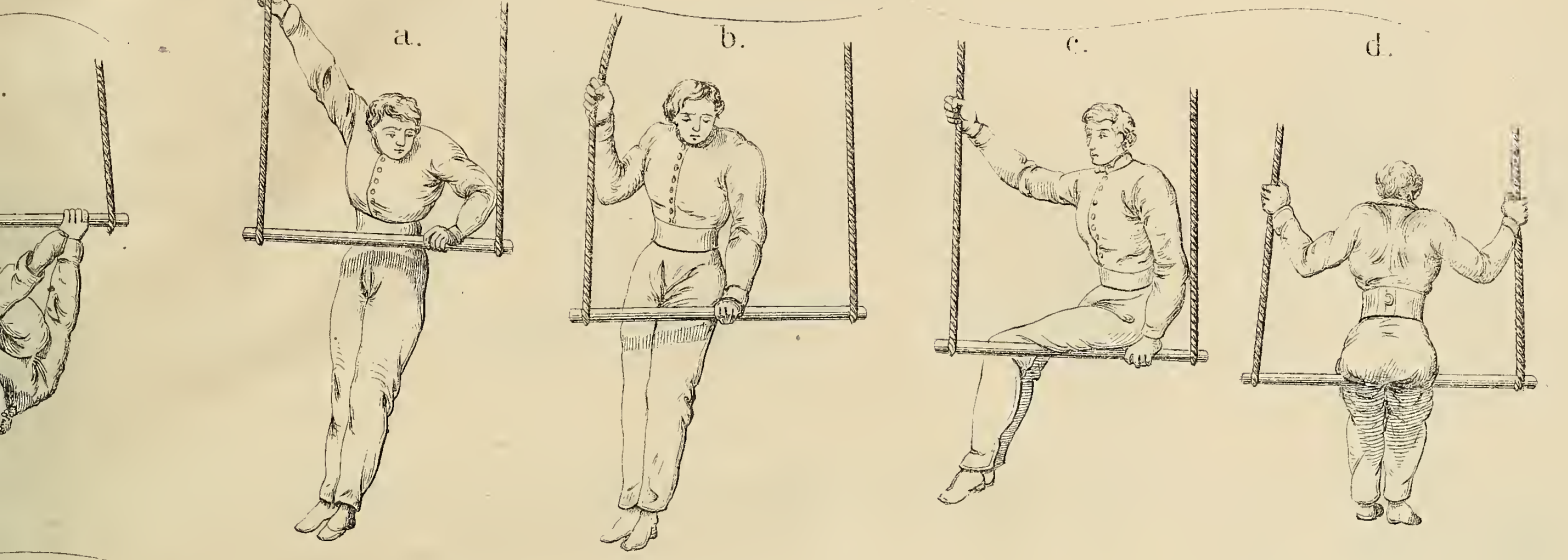

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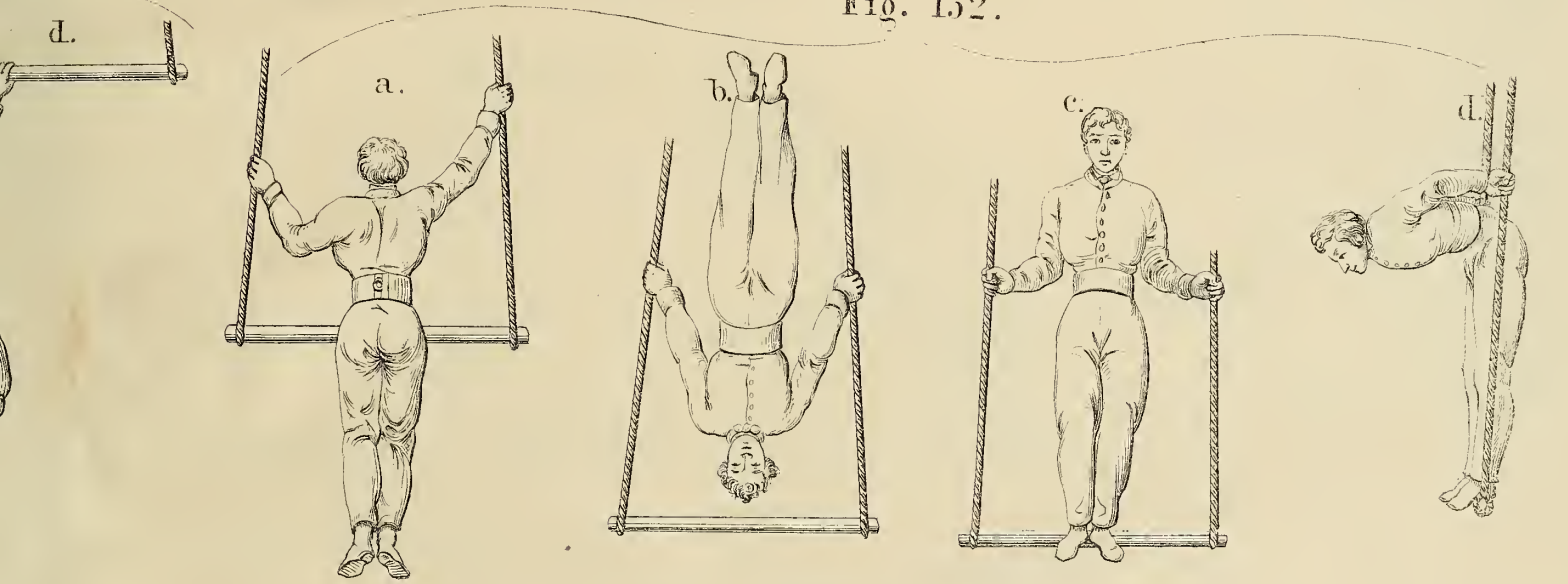

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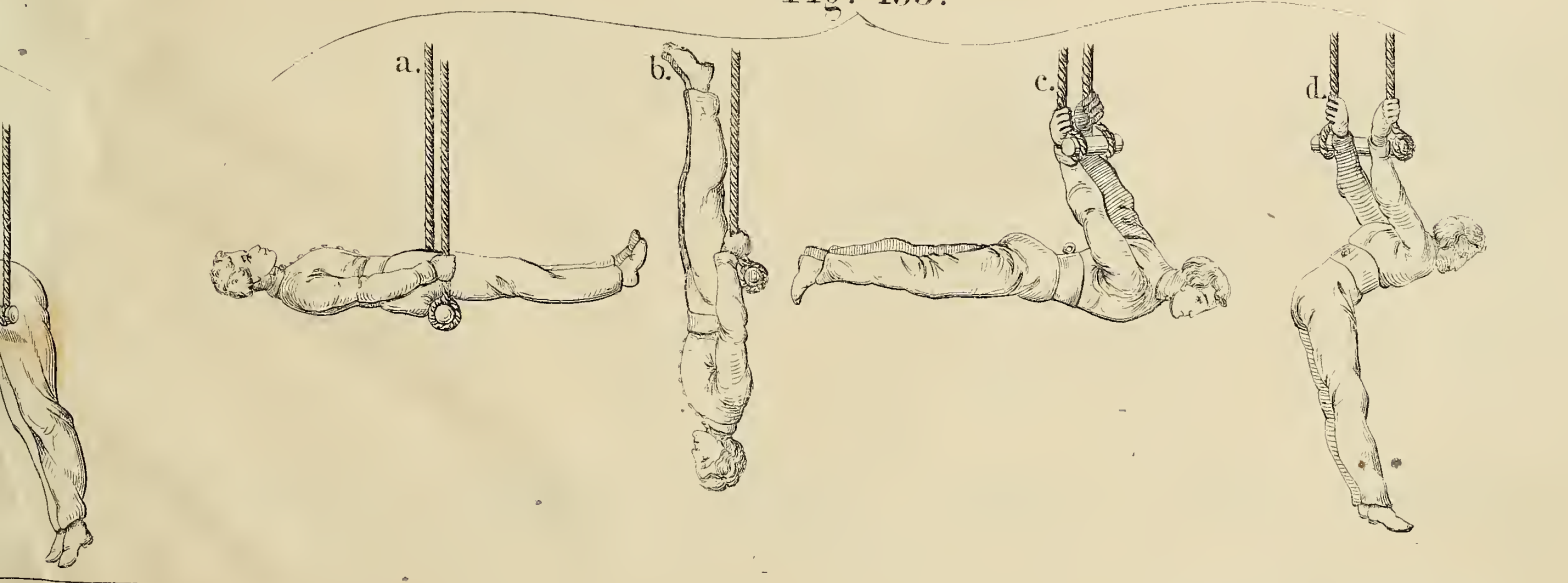

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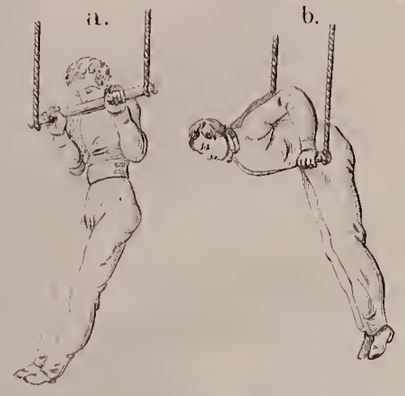

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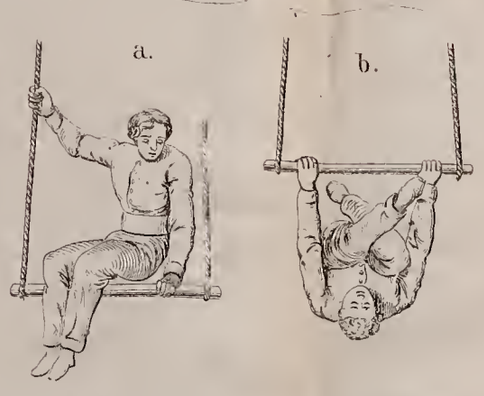

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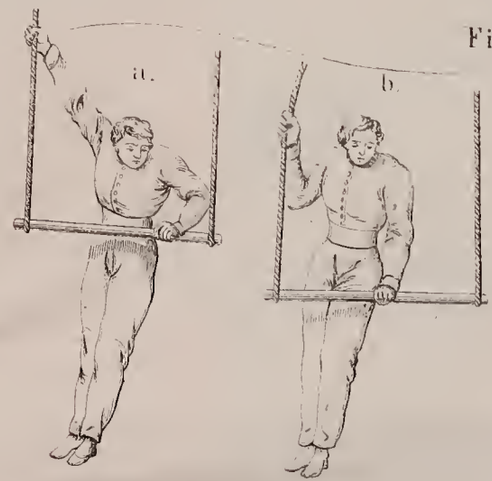

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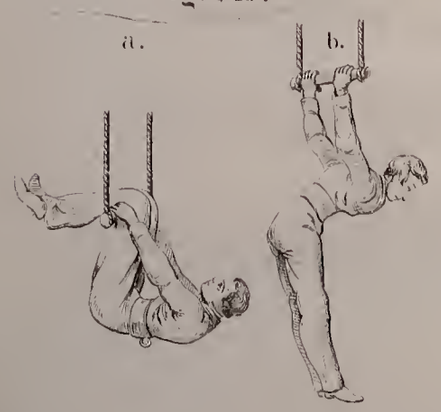

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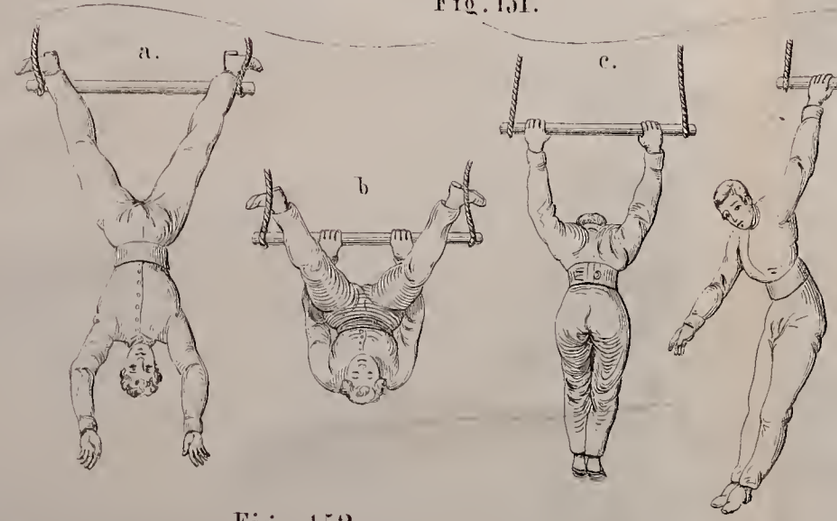

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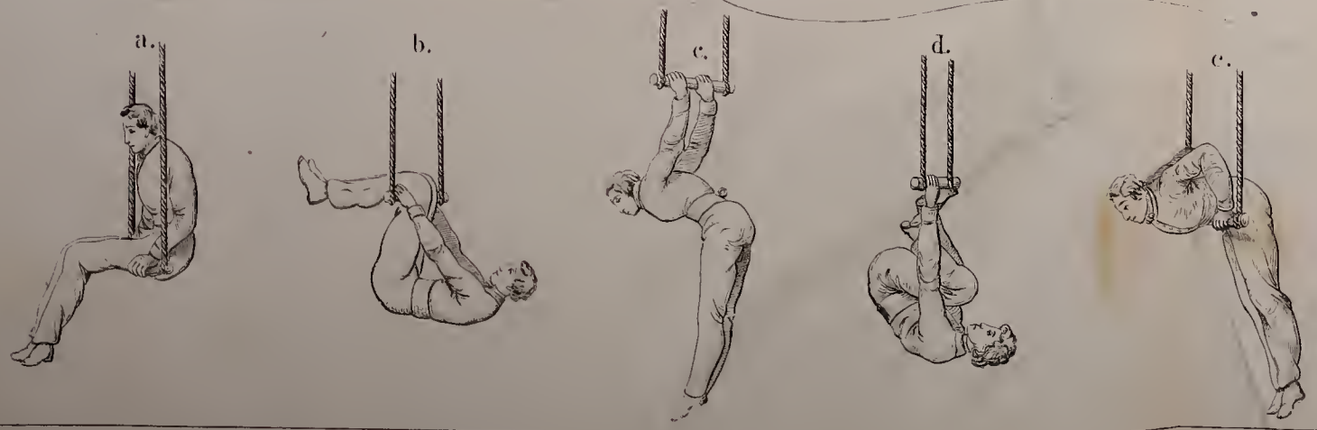

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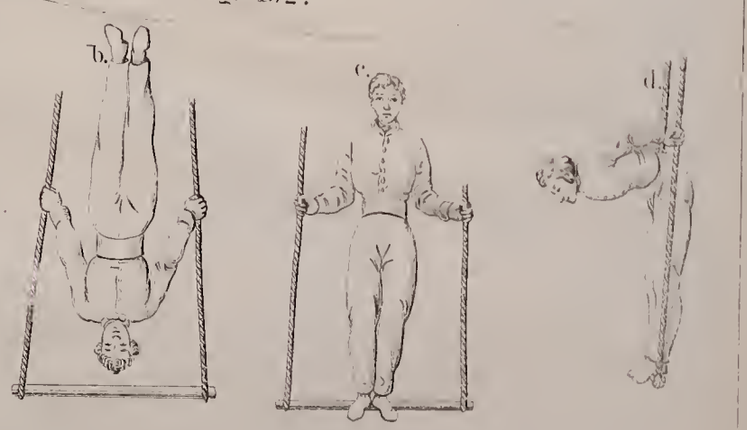

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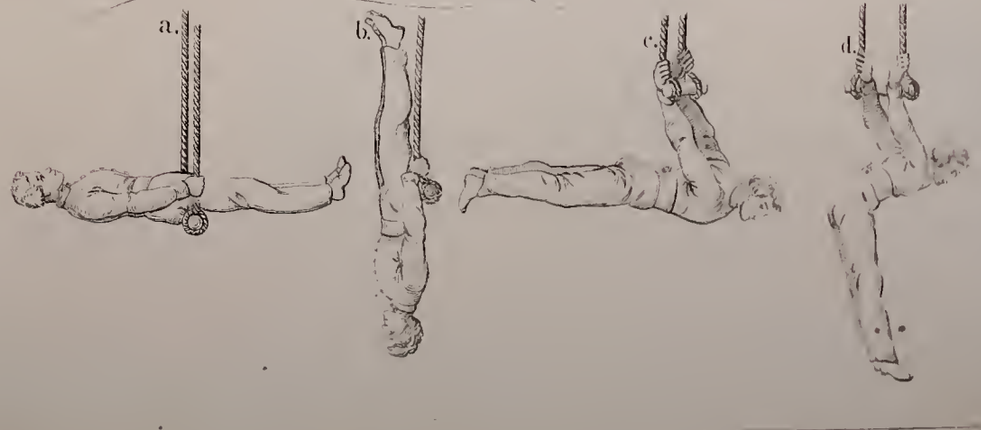

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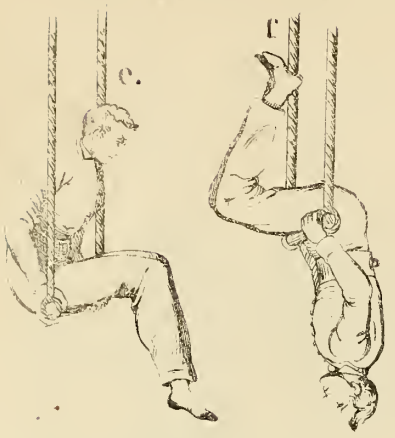

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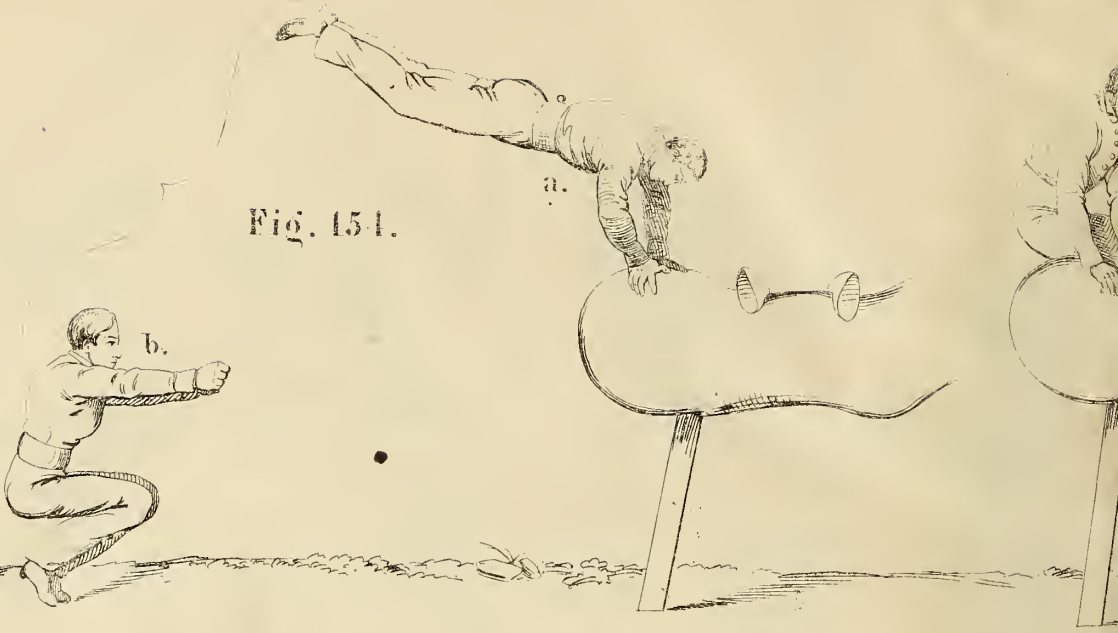

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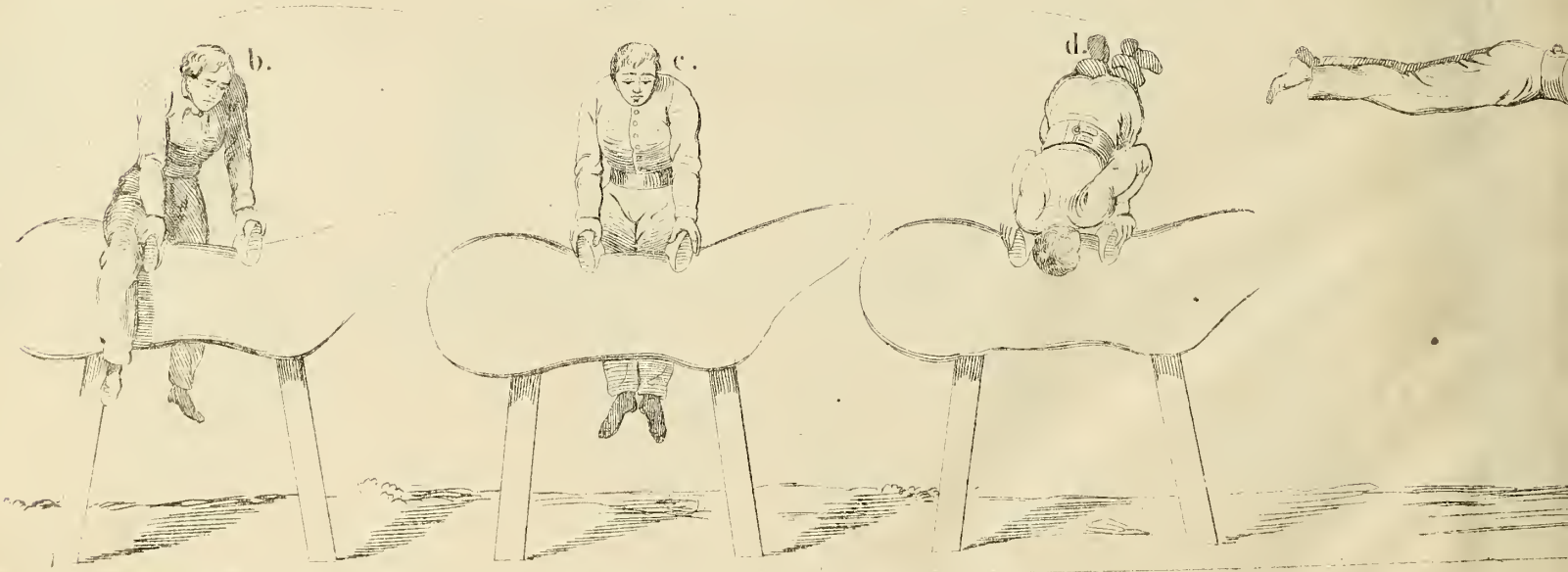

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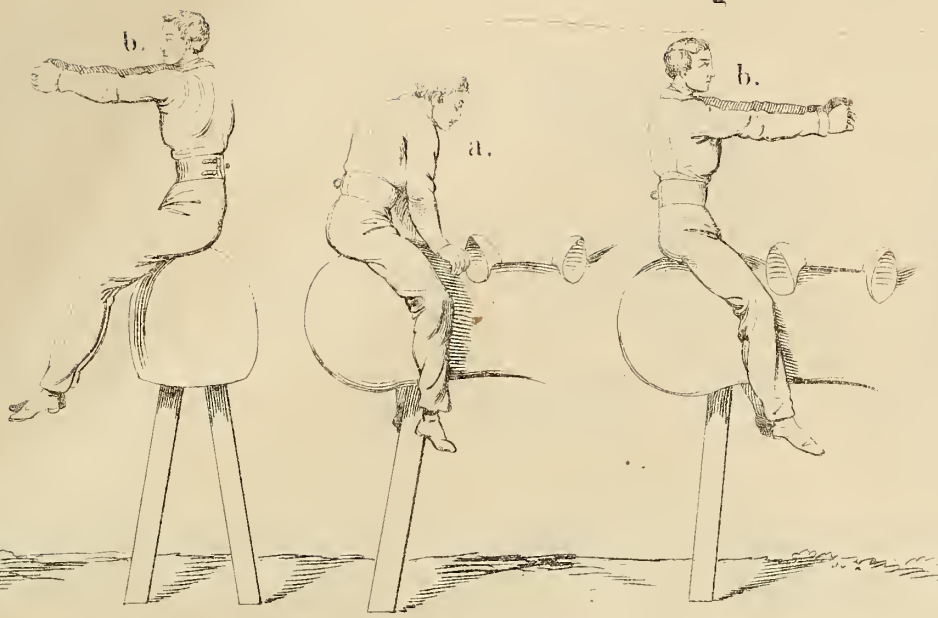

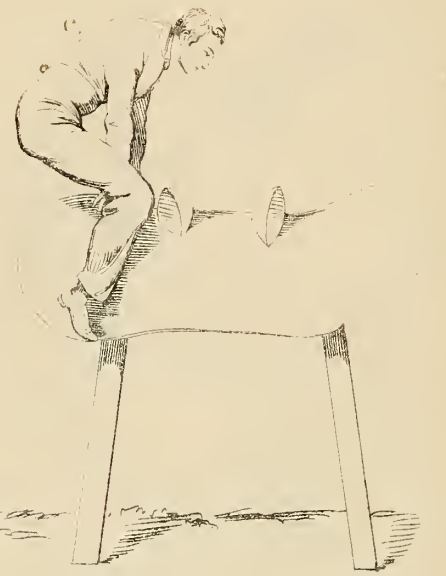

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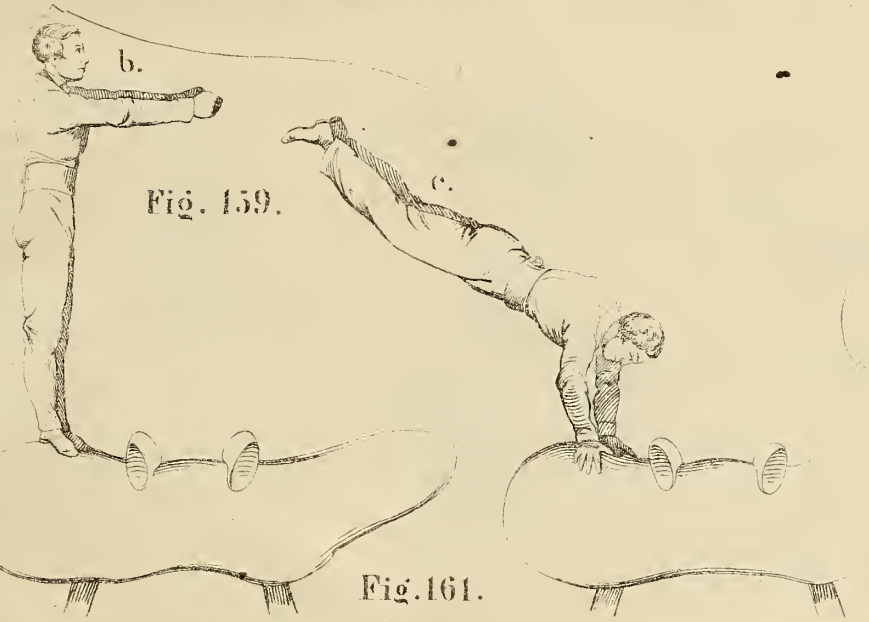

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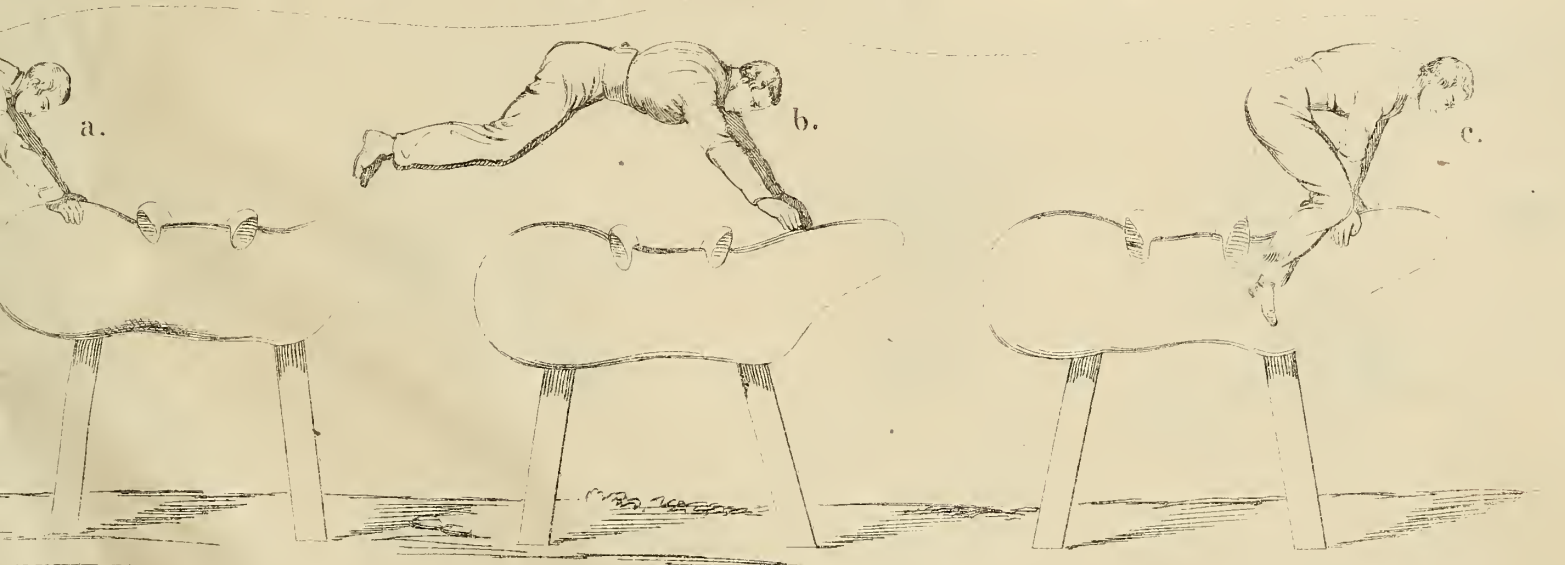

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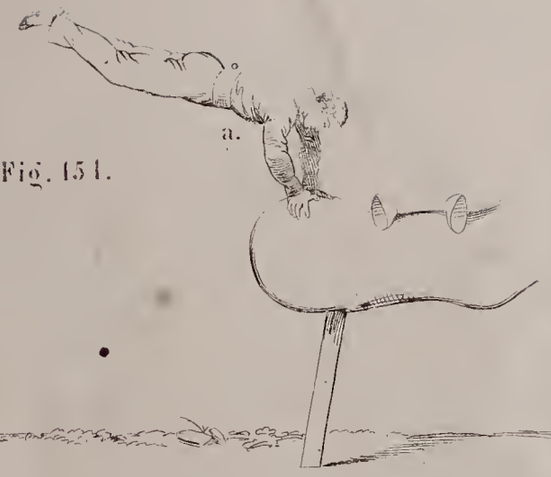

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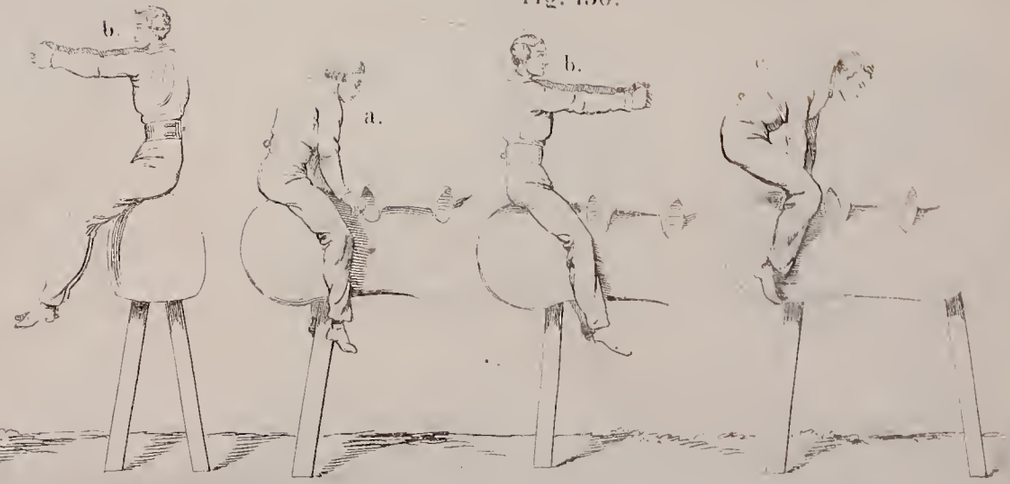

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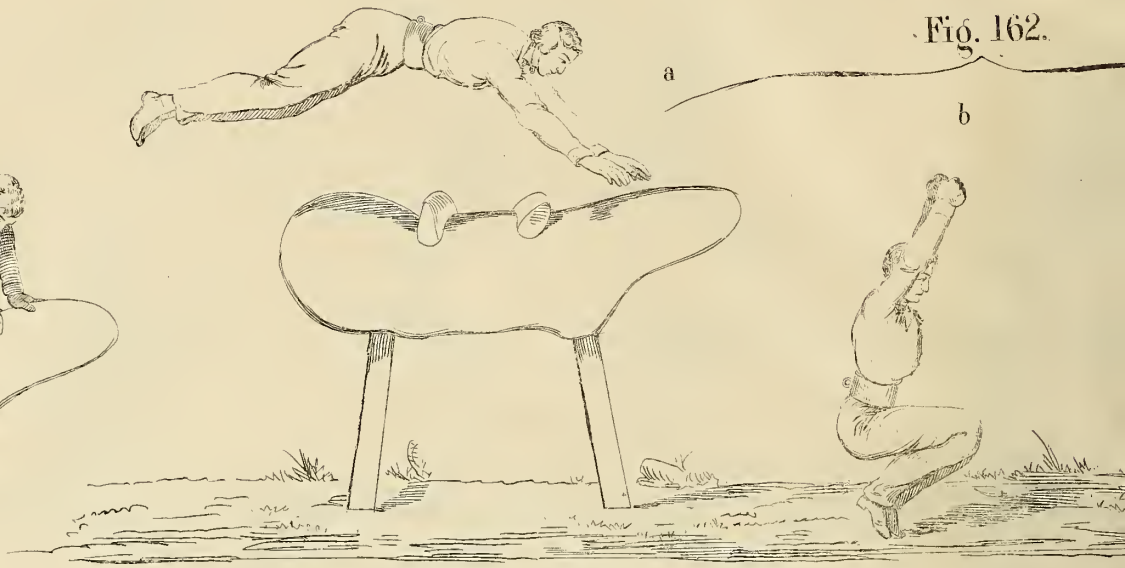

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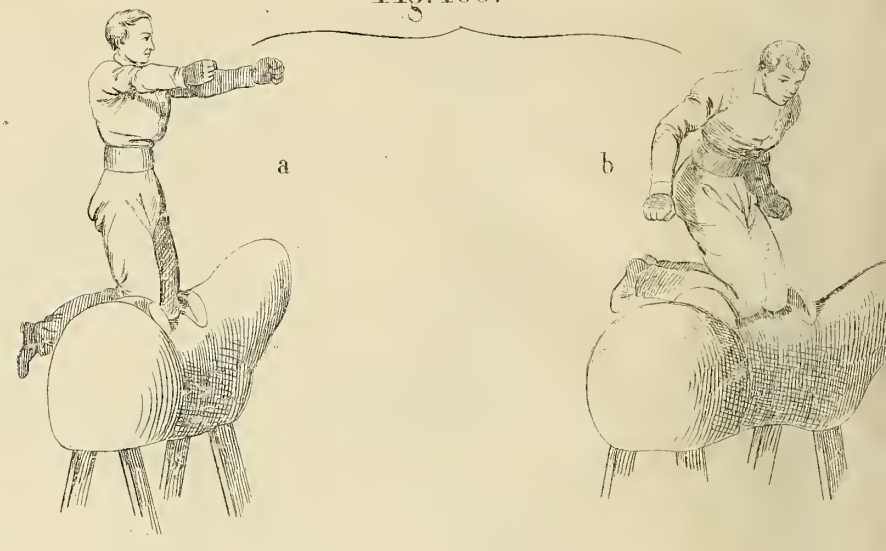

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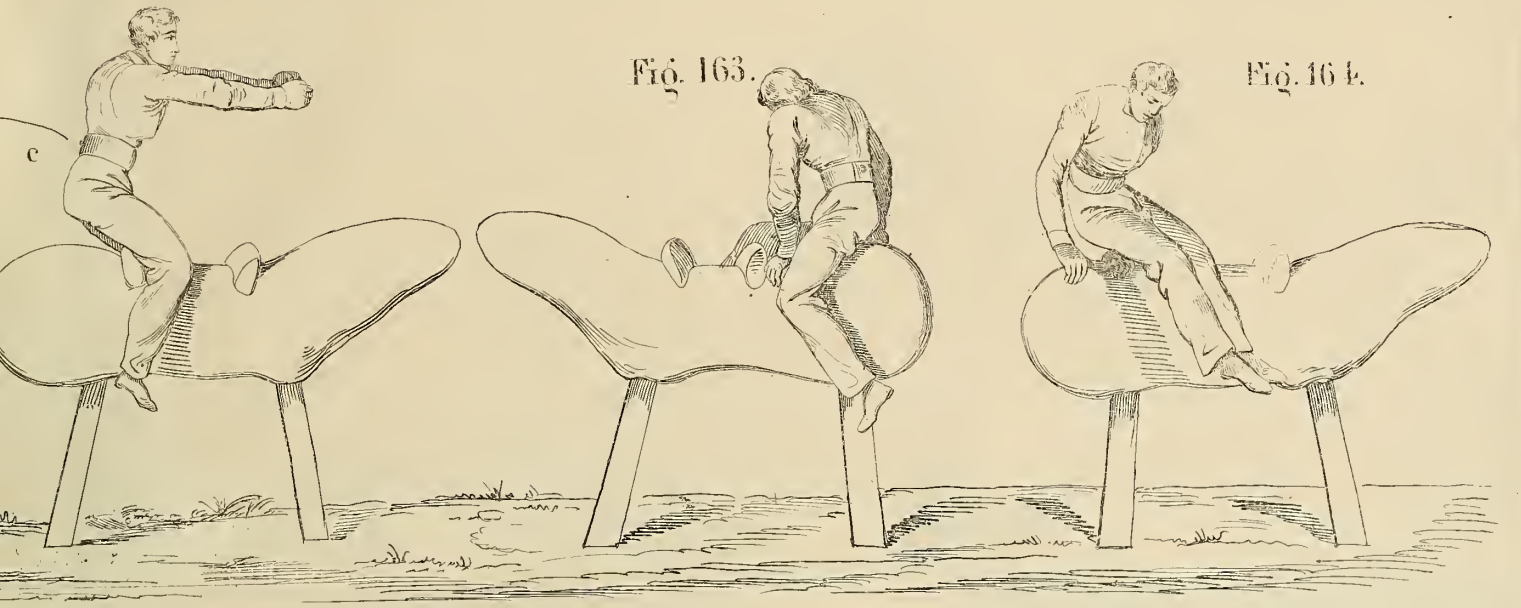

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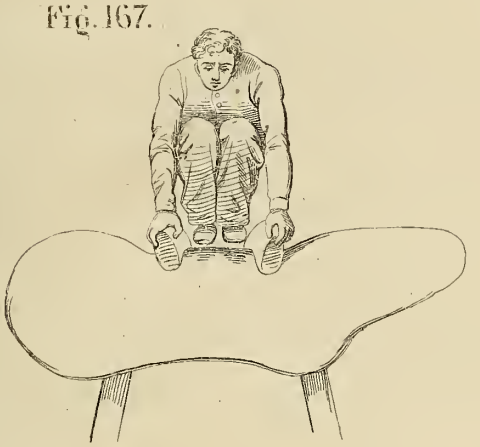


Fig. 168.

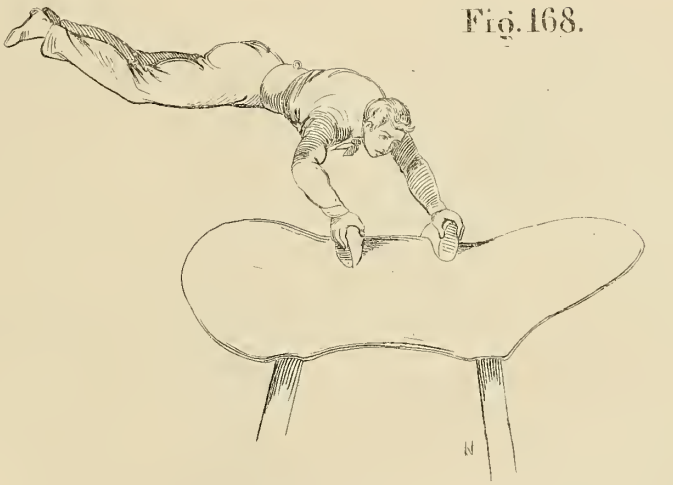


Fig. 170.

Fig. 171.

Fig. 172.

Fig. 173.

Fig. 161.

Fig. 162.

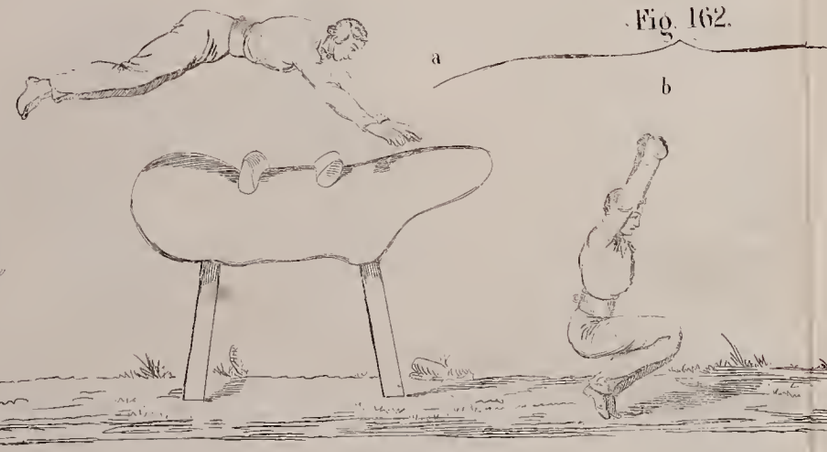


Fig. 163.

Fig. 164.

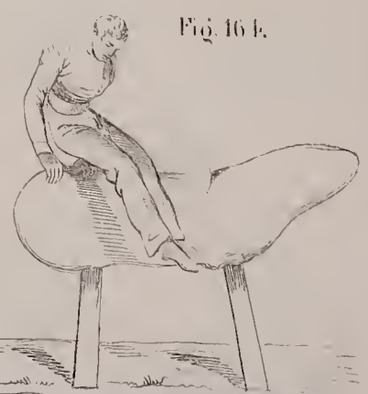


Fig. 165.

Fig. 166.

Fig. 167.

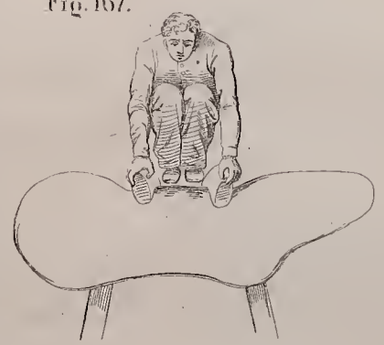


Fig. 168.

Fig. 169.

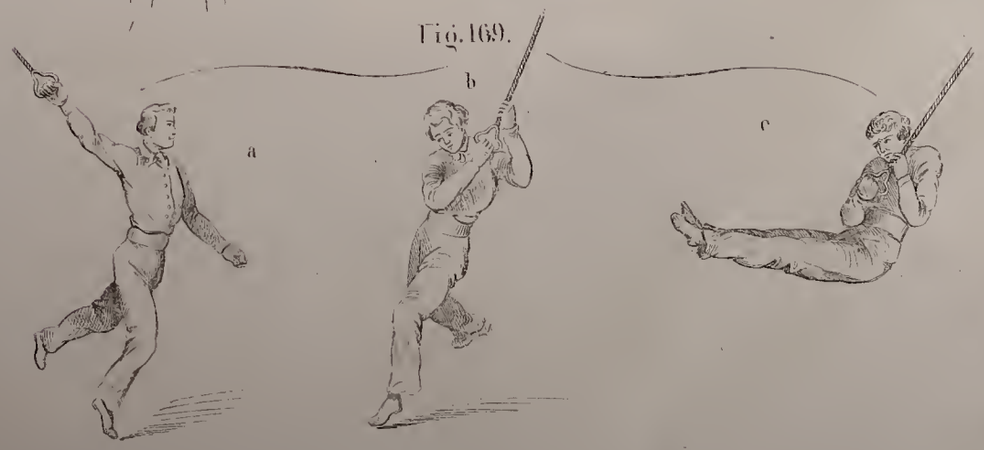


Fig. 170.

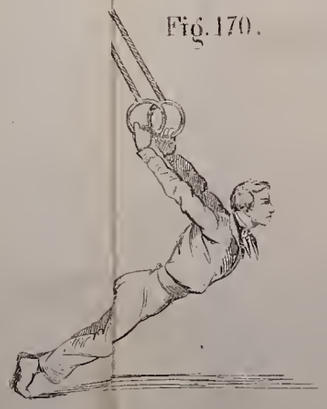
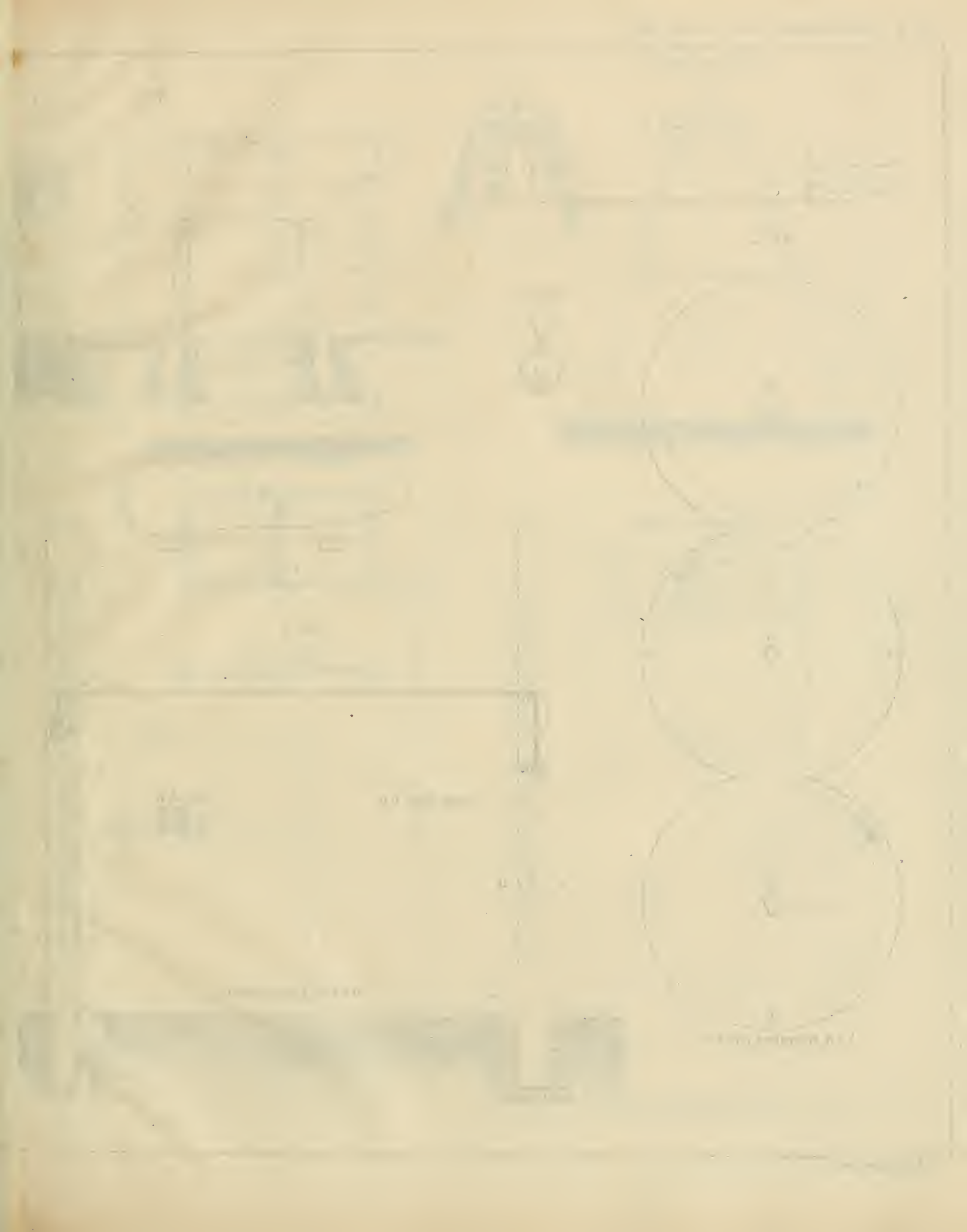
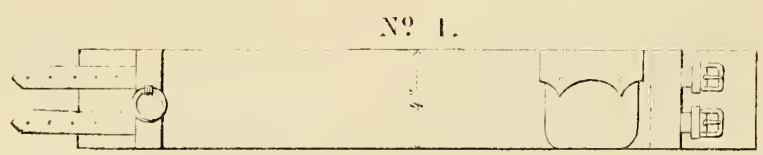


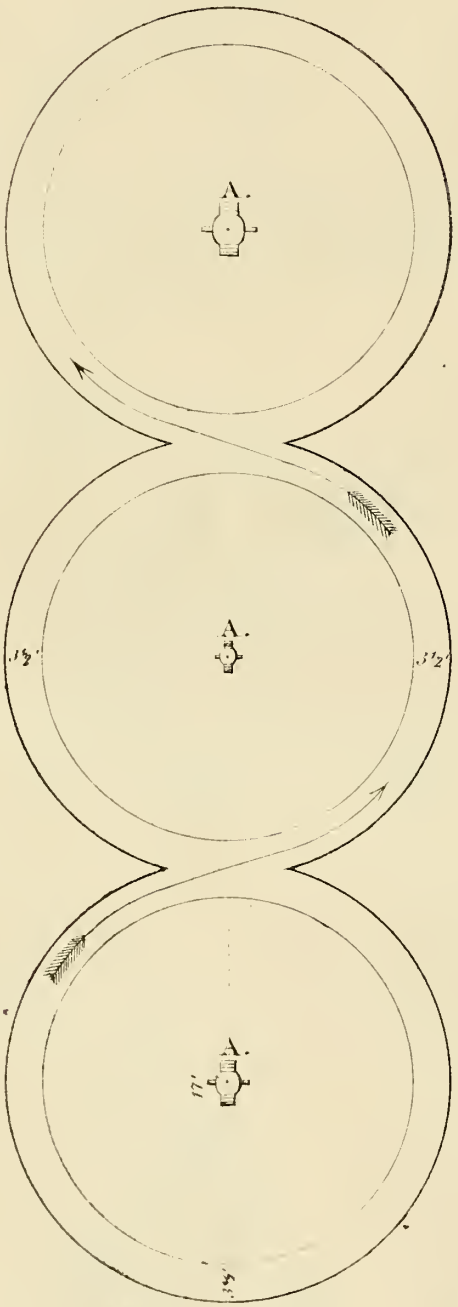
Fig. 171.

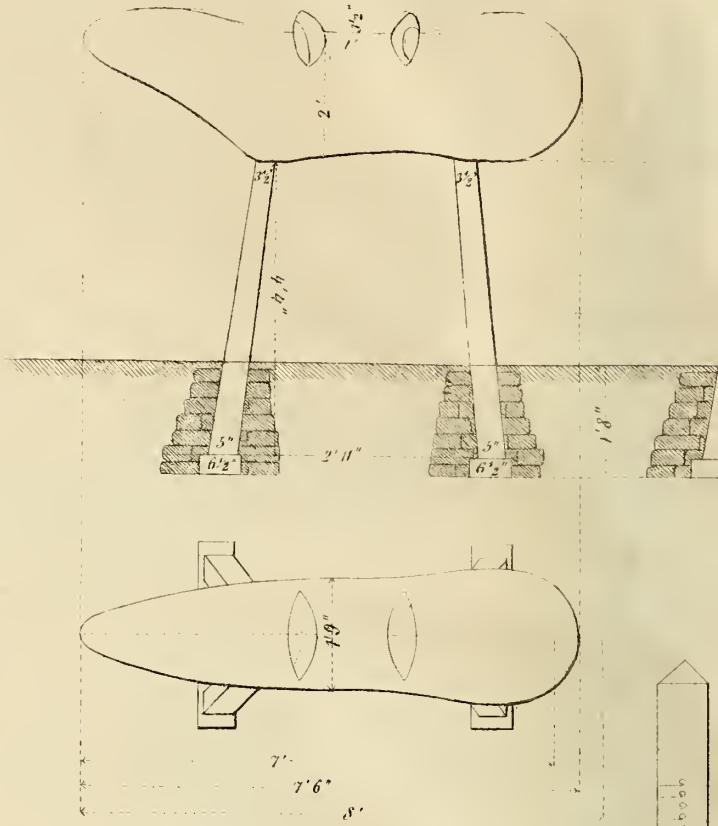
Fig. 172.

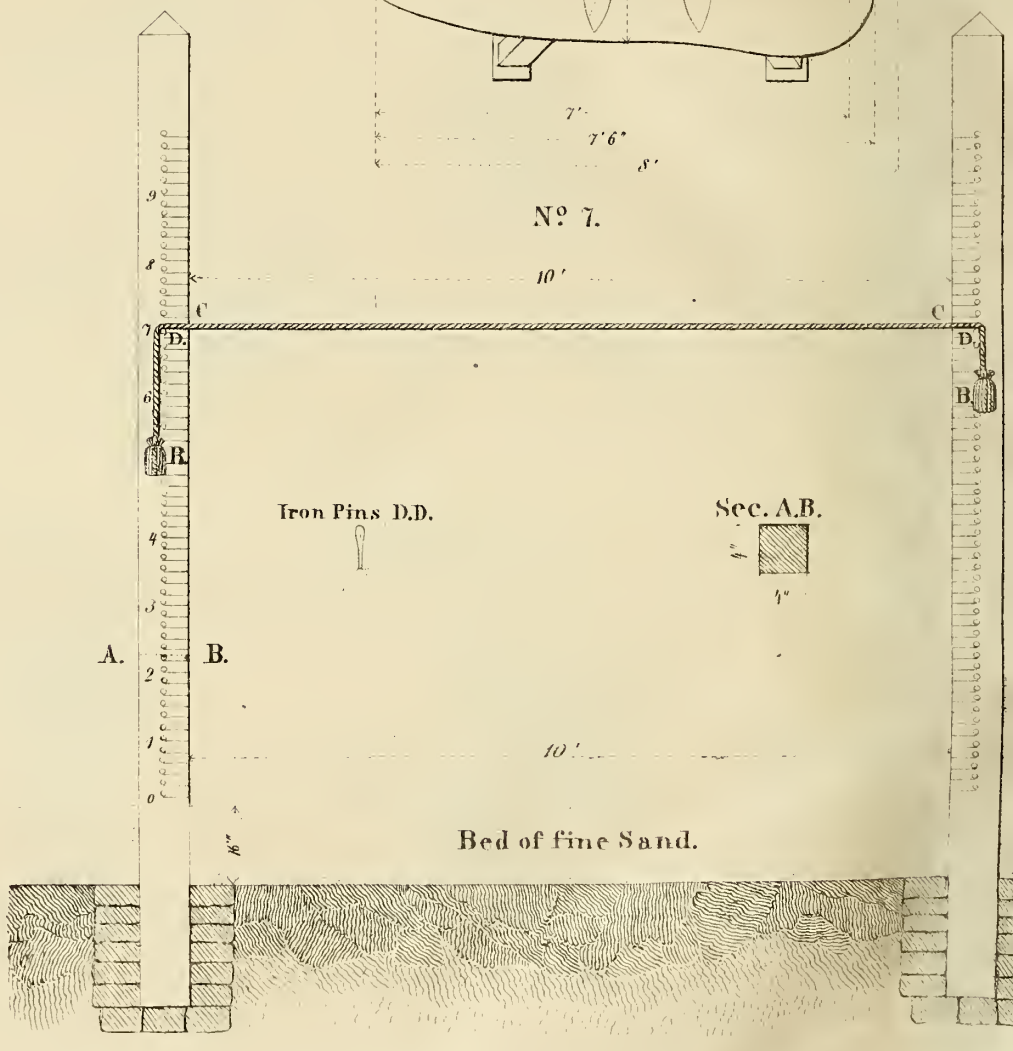
Fig. 173.







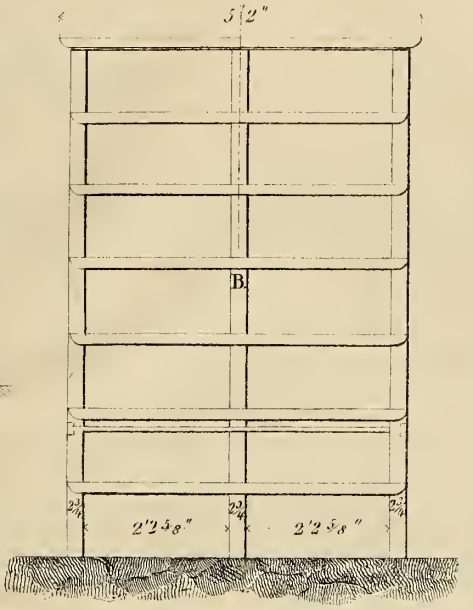




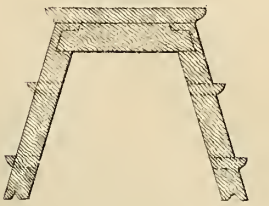
J. F. d'Alfonce del.

Jumping Table

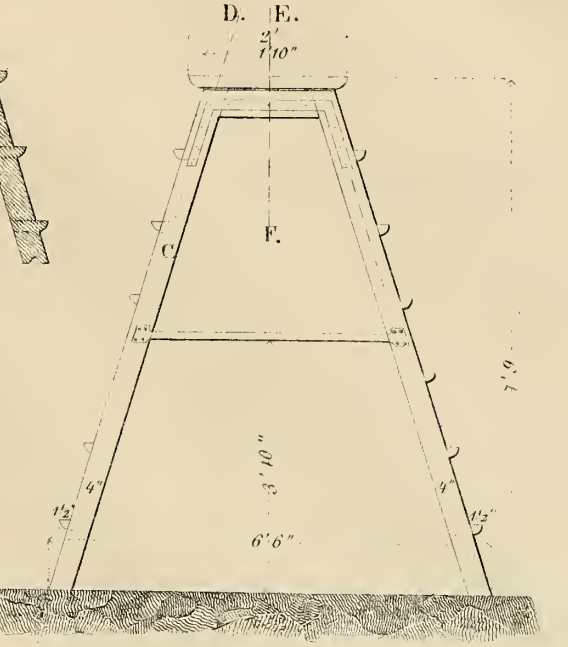
A.



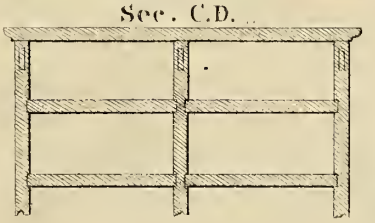
Nº 9.
Sec. A.B.



D. E.



Sec. C.D.

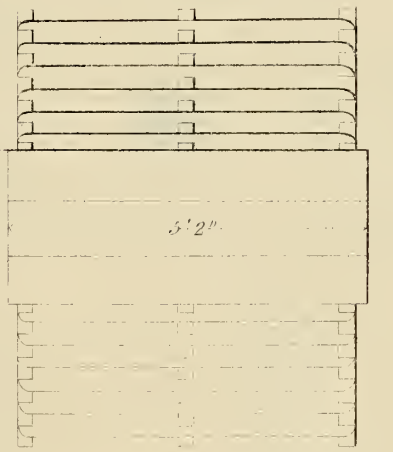


Nº 6.

Nº 10.

Nº 11.

Birds eye view.



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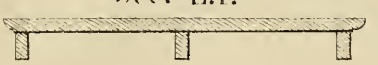

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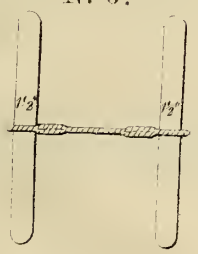
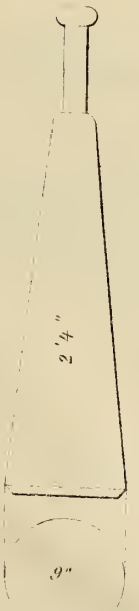
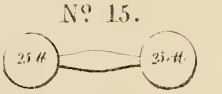
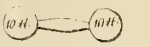




Nº 4.

Nº 15.





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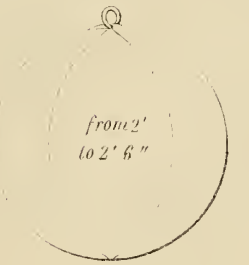

Nº 14.

Nº 13.

Iron Bar from 6 ℔ to 20 ℔.

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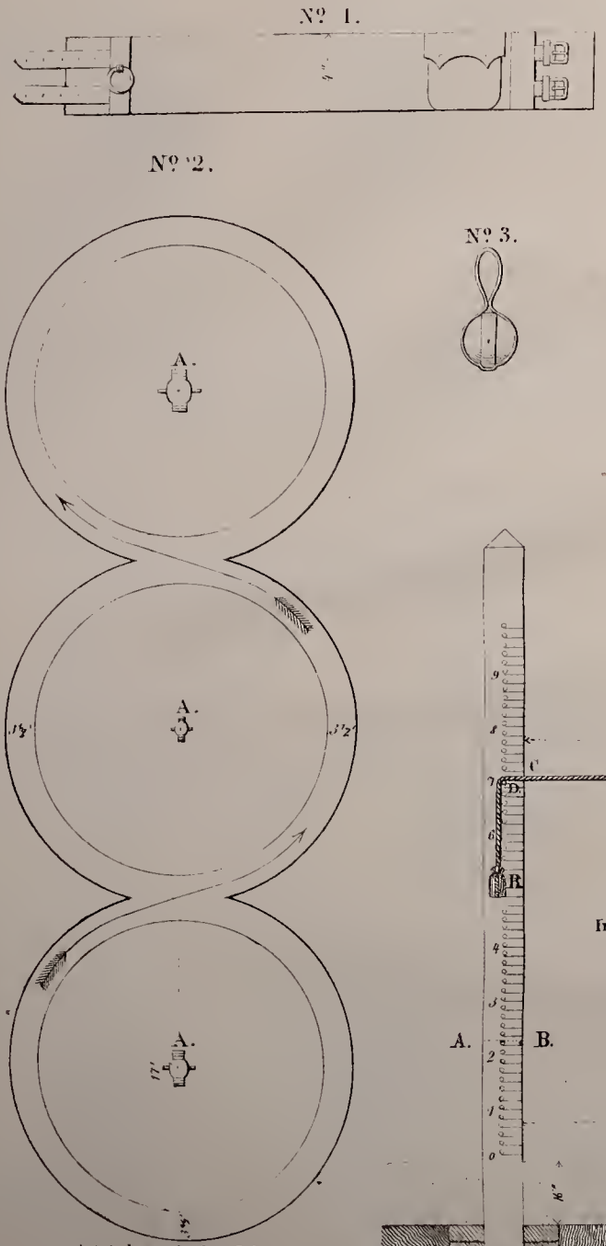


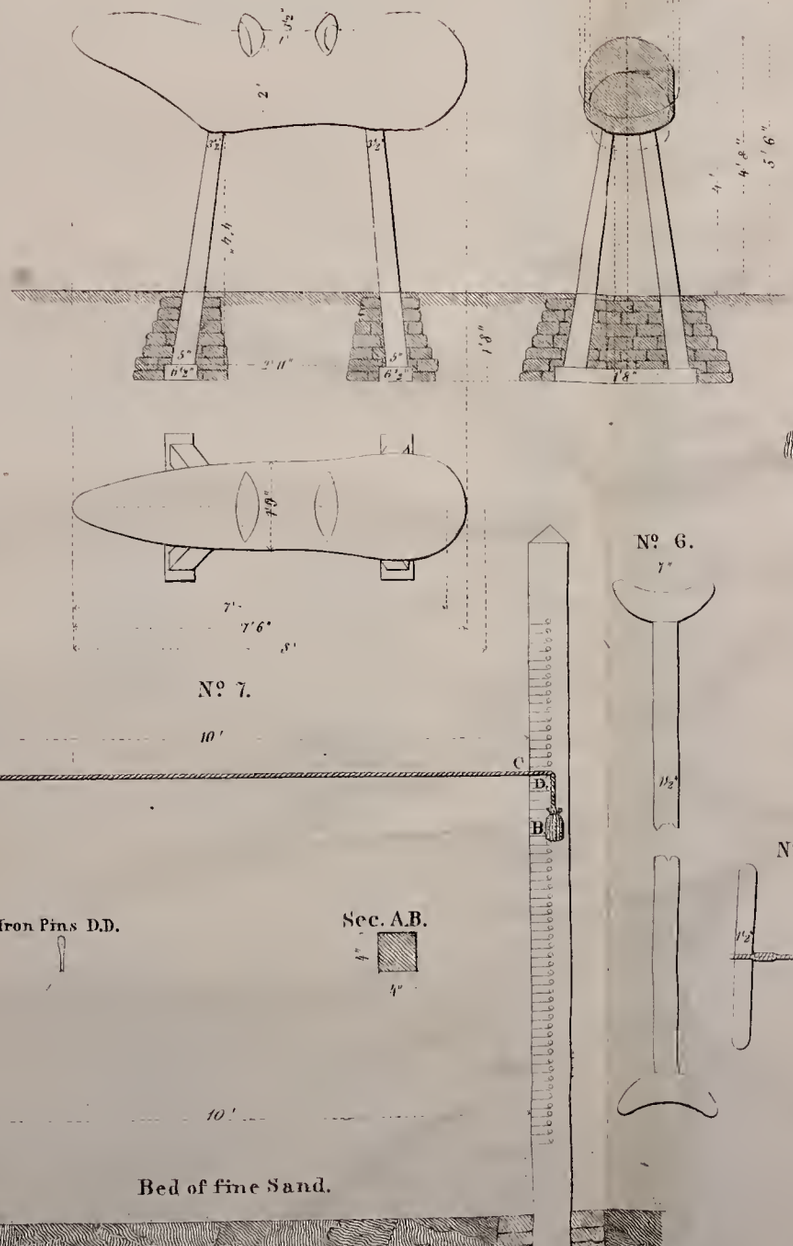
A.A.A. Jumping tables.

Nº 1.

Nº 2.

Nº 3.

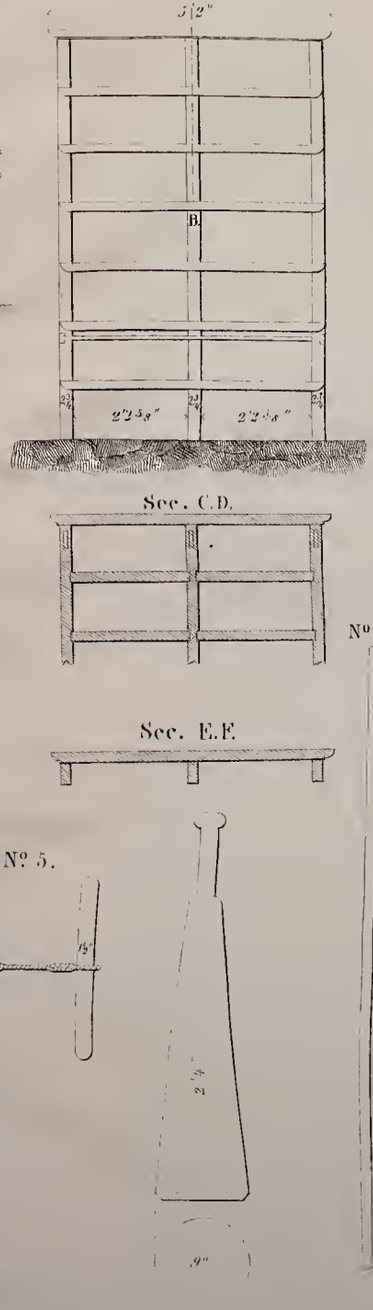
Nº 8.



Nº 7.

Nº 6.

A.



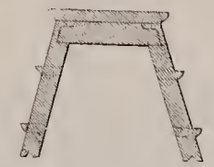
Sec. C.D.

Sec. E.F.

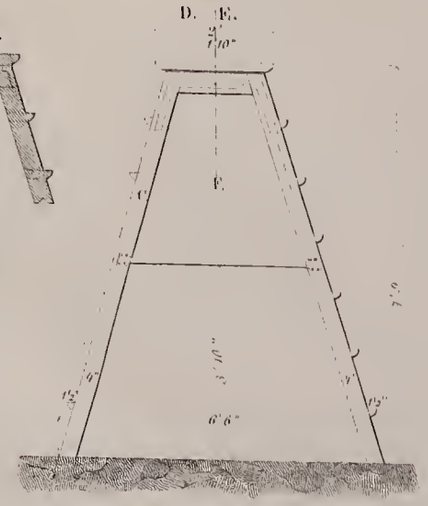
Nº 5.

Nº 4.

Nº 9.
Sec. A.B.



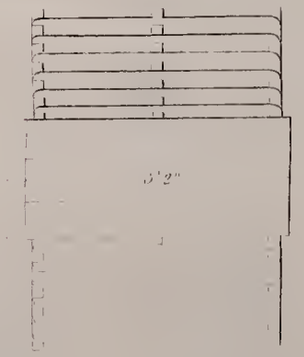
Jumping Table



Nº 10.

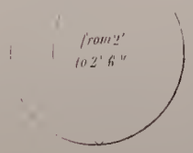
Nº 11.

Birds eye view.



Nº 15.

Nº 12.



Nº 14.

Nº 13.

Iron Bar from 6 ft to 20 ft.

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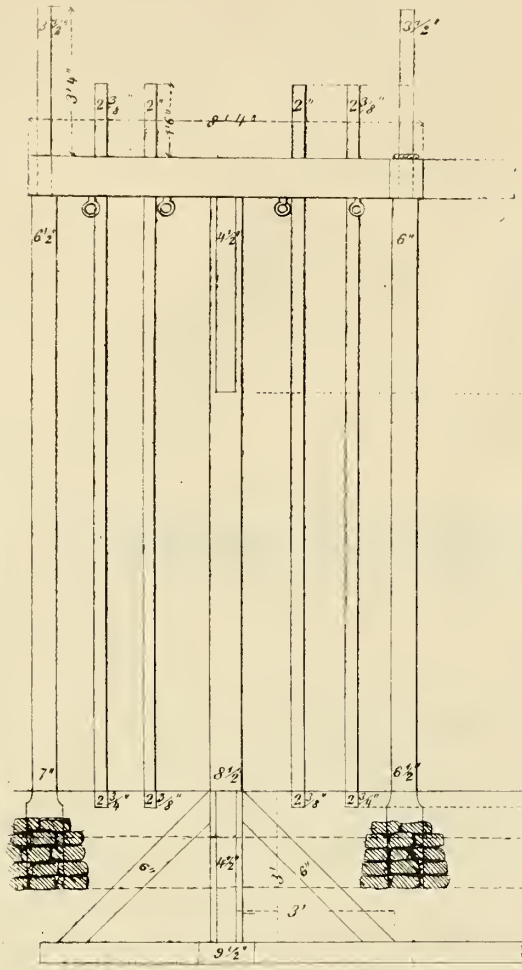
H. F. Nesbitt & Co. 120 Wall & 1 Water St. N.Y.

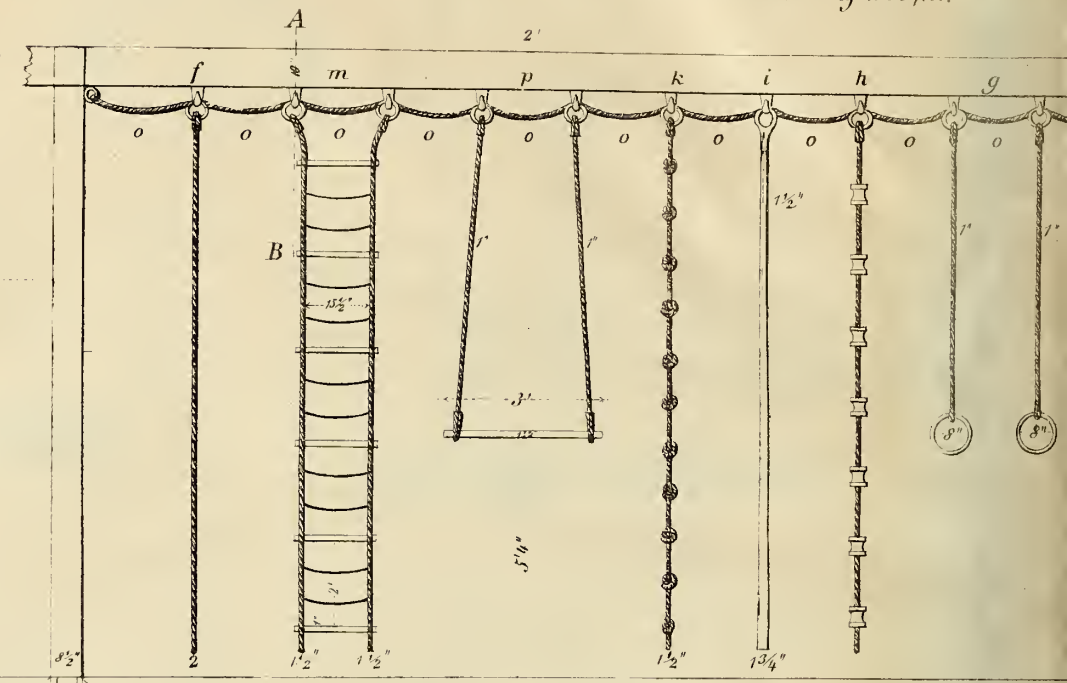
End view of the Portico.

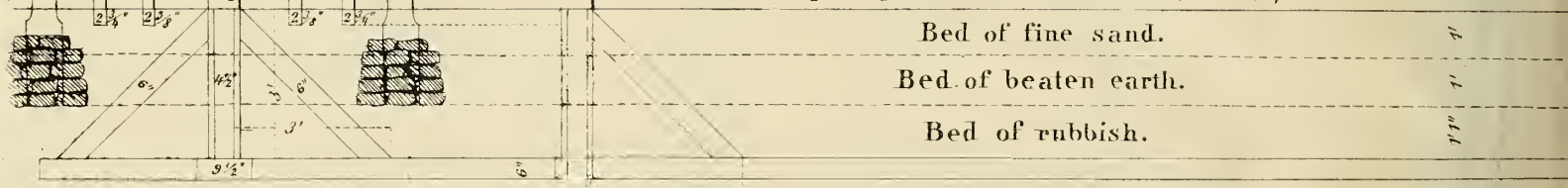


Nº 16.

Portico of the 1st Class.

Total length 50 feet.





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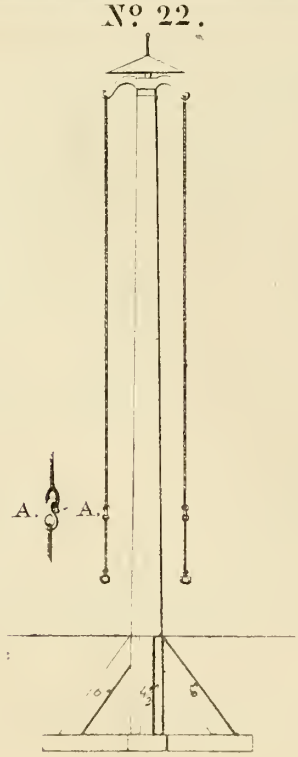

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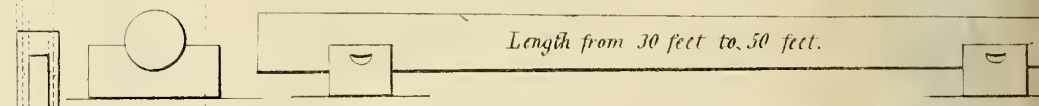
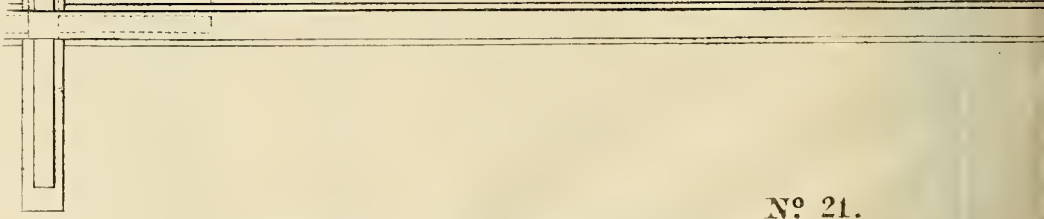


Birds eye view of the Portico.



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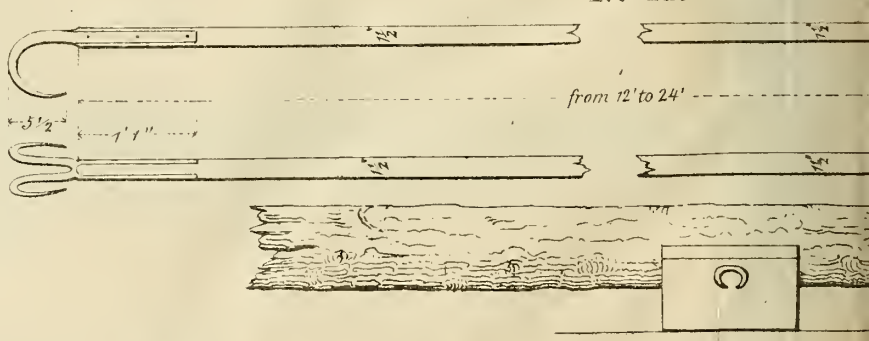
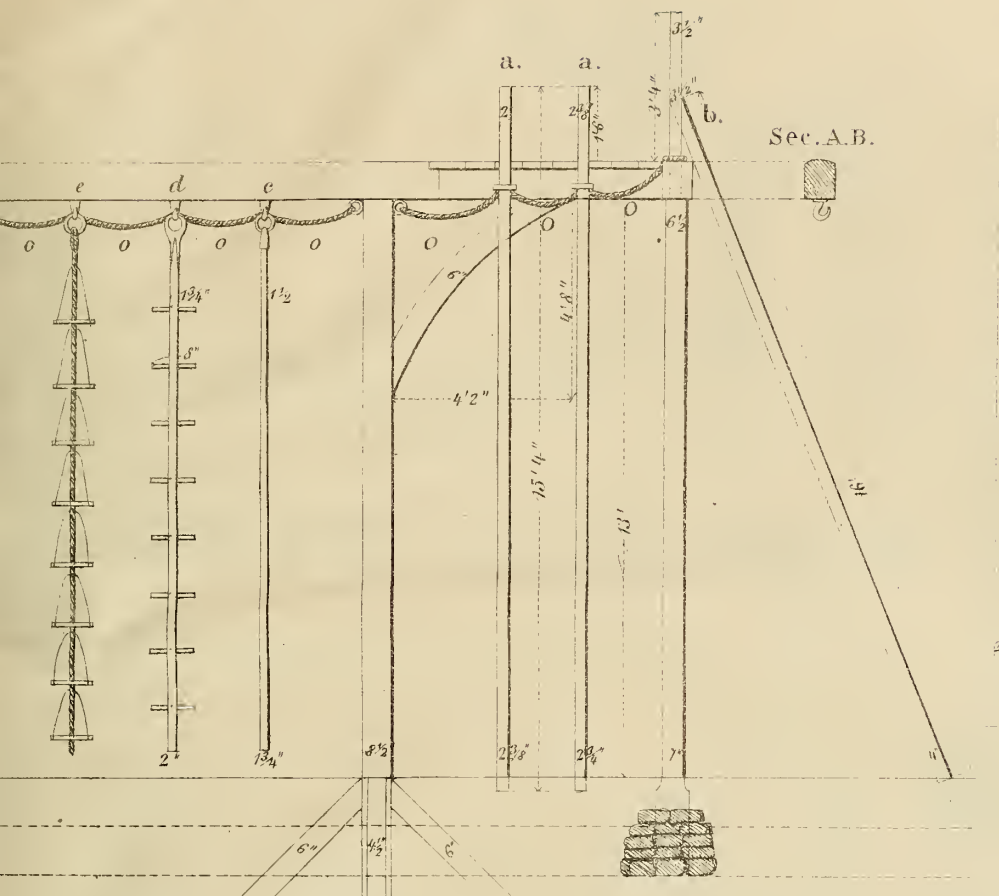
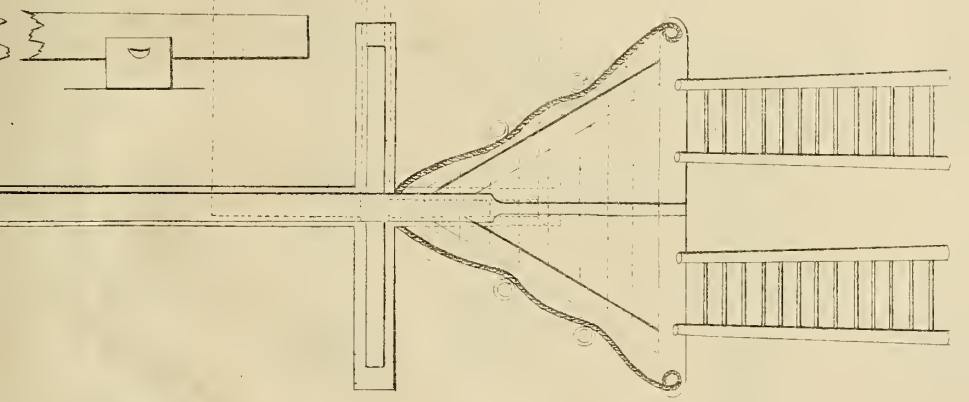
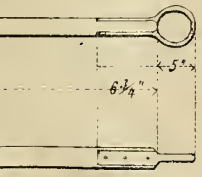


J E d'Alfonce del.







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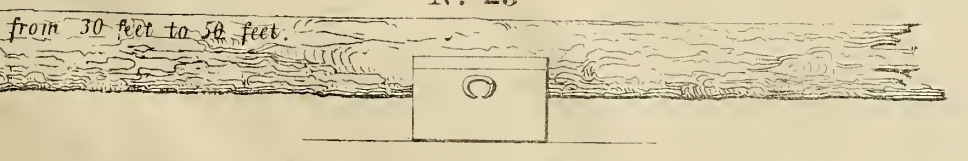

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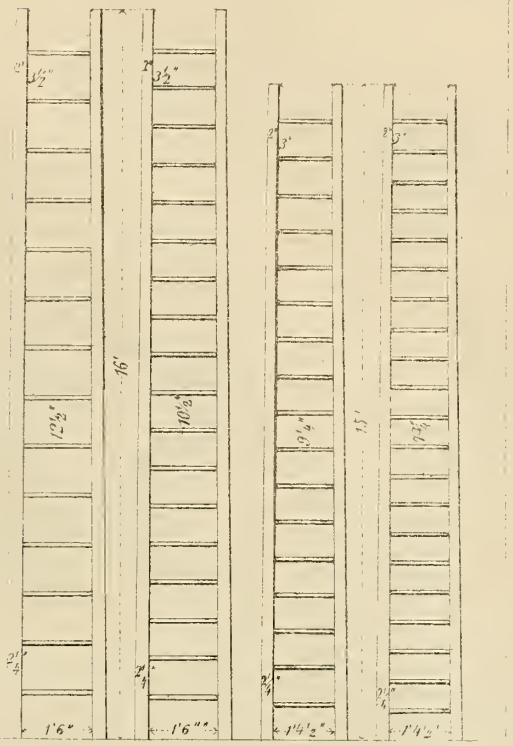

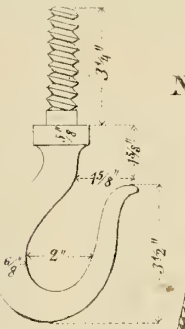

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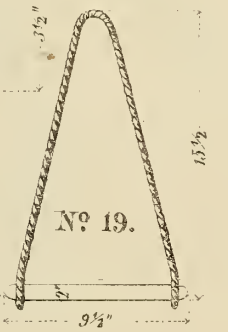

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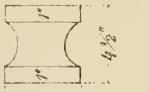

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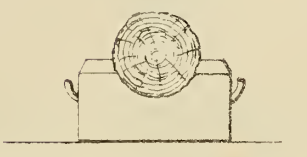

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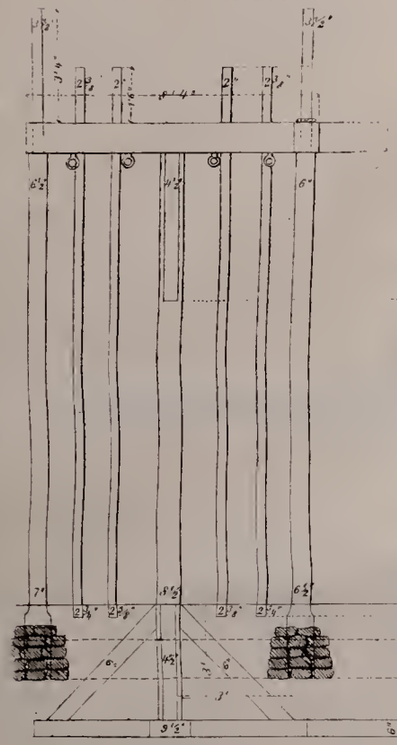
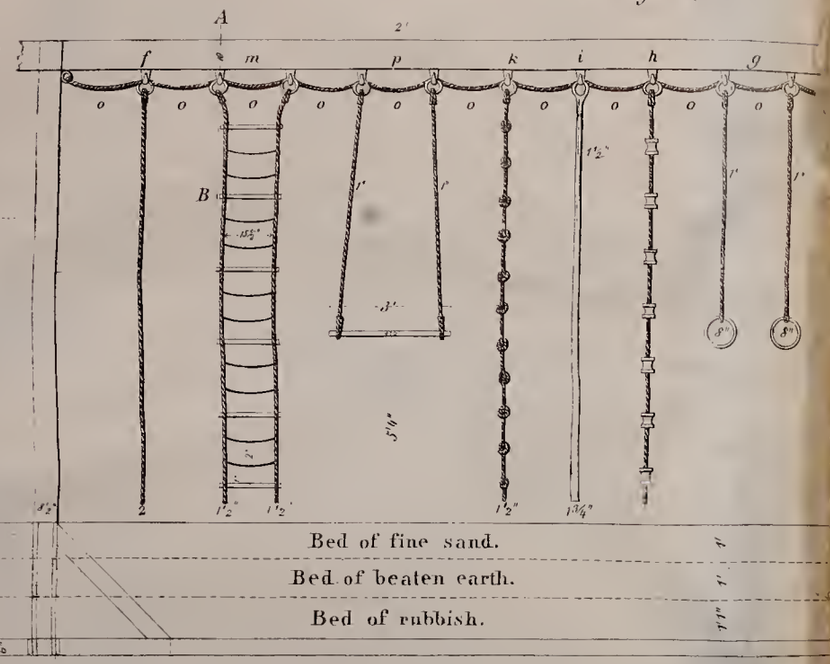
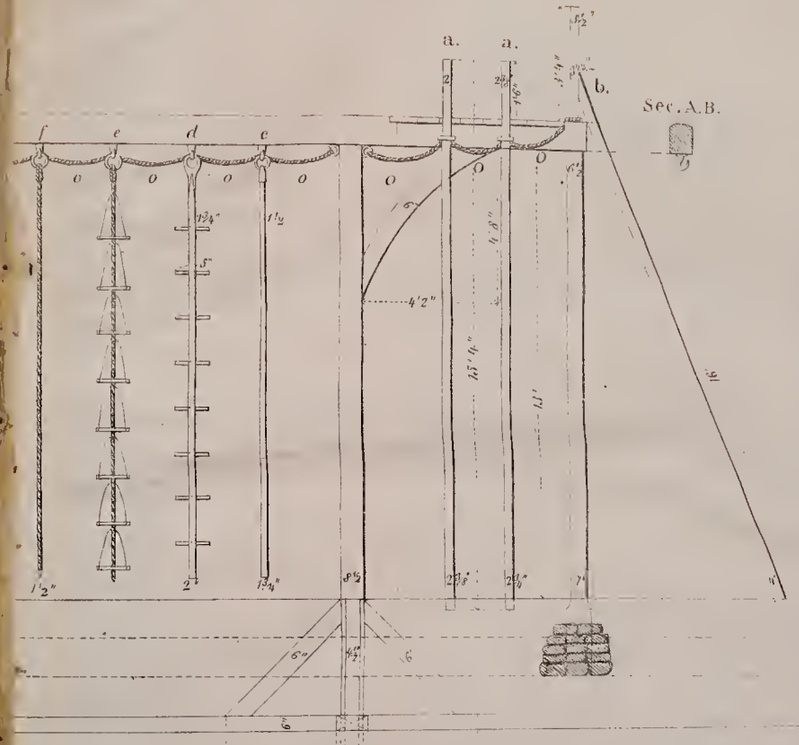
End view of the Portico.



Nº 16.
Portico of the 1st Class.
Total length 50 feet.





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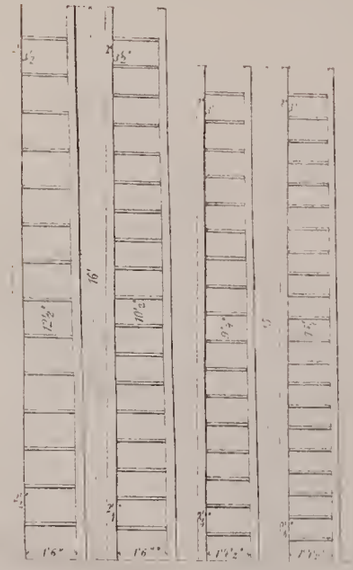

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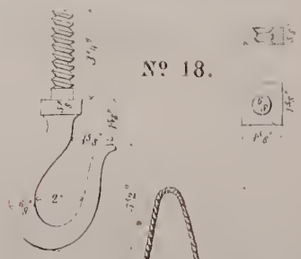
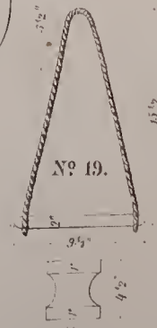
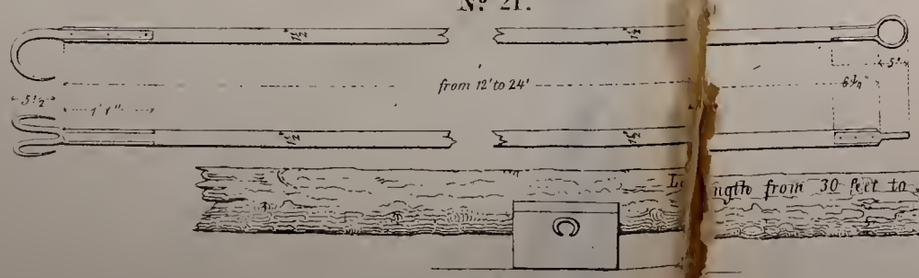


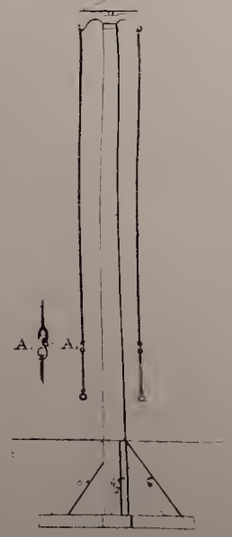
Nº 19.



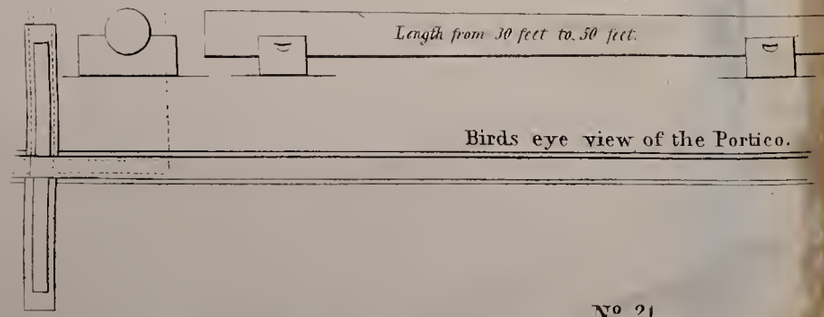
Nº 21.



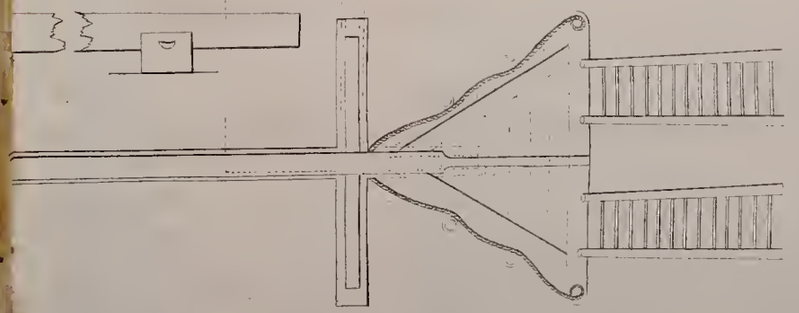
Nº 22.



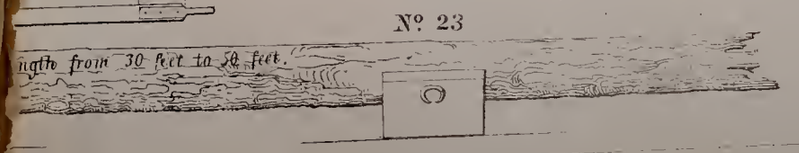
Nº 20.



Birds eye view of the Portico.



Nº 23



Nº 24.

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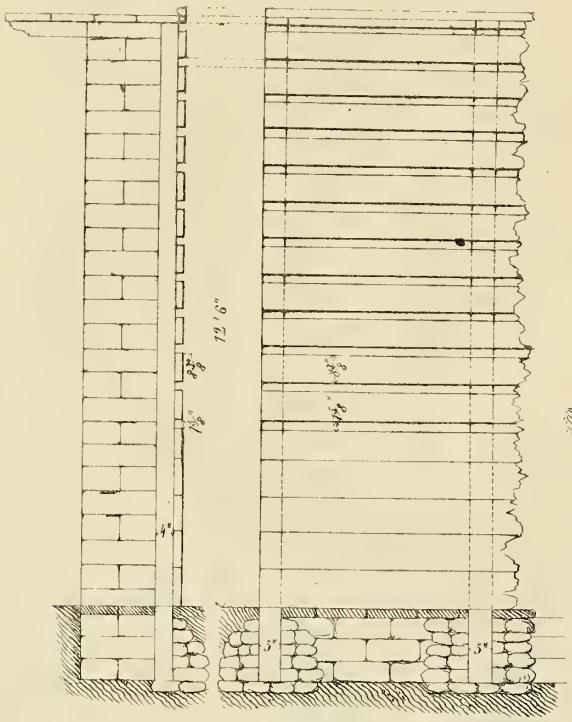
Nº 25.

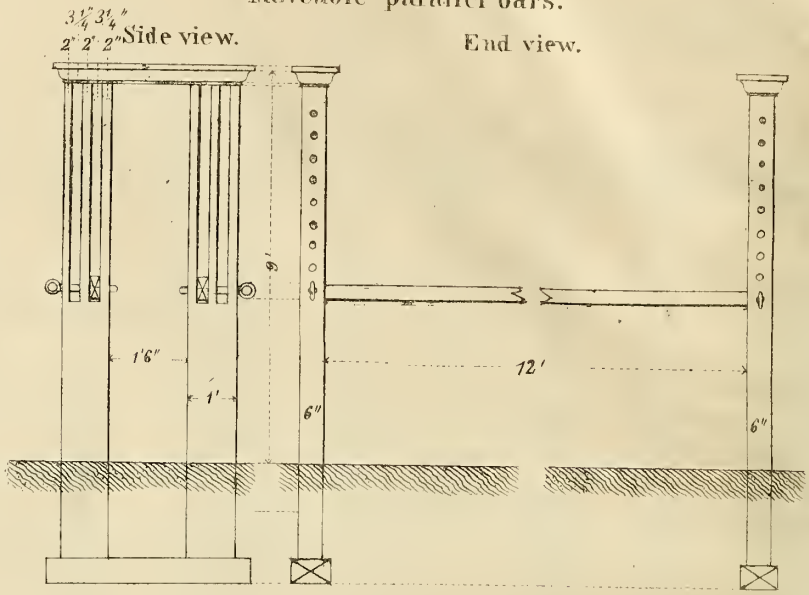
Grooved boards

Side view. Front view.



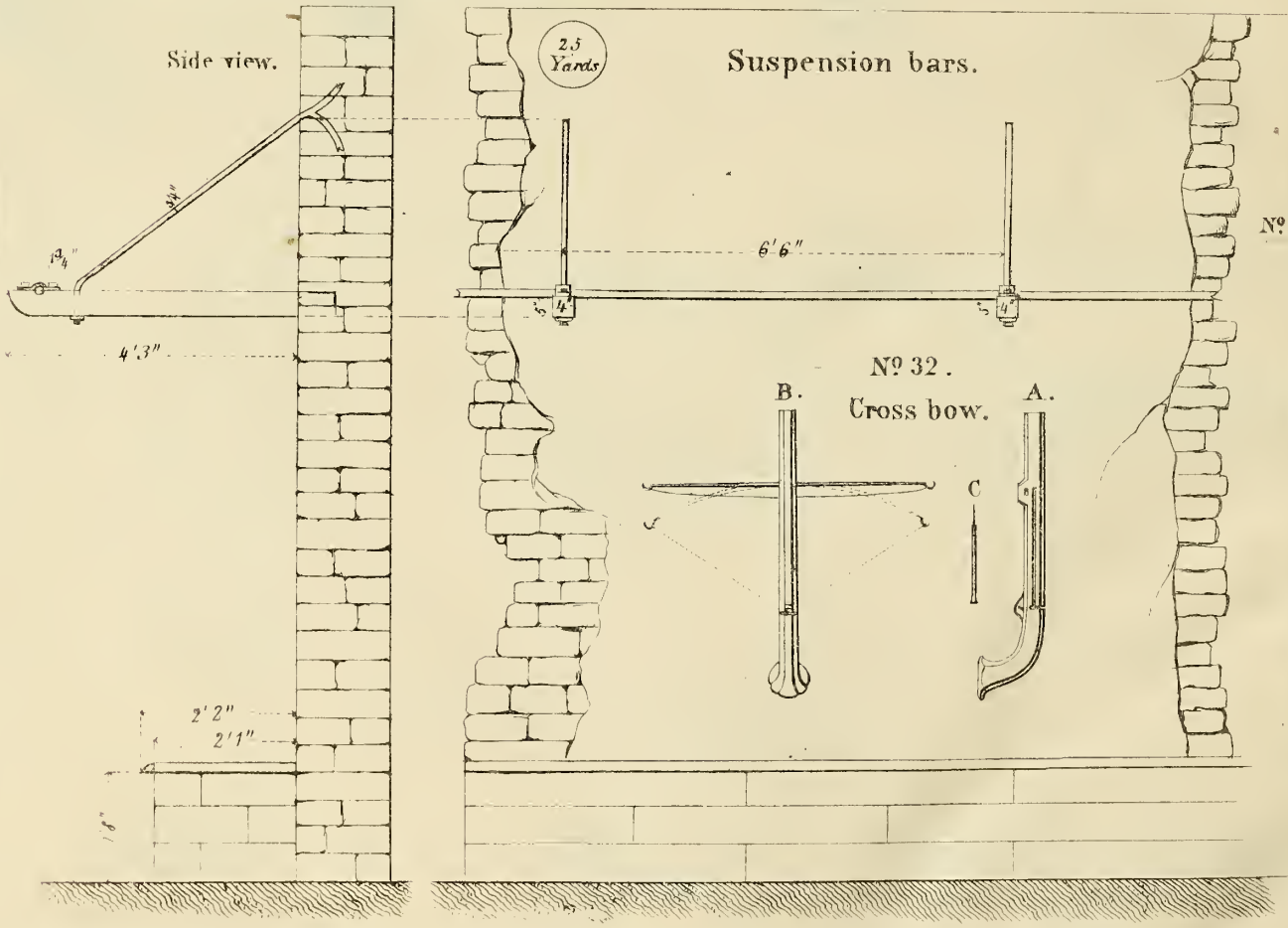
Nº 26.

Moveable parallel bars.



Nº 29.

Suspension bars.

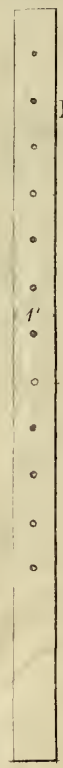


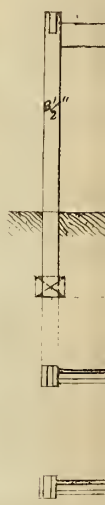
Nº 32.

Cross bow.

Nº 35

Nº 36.





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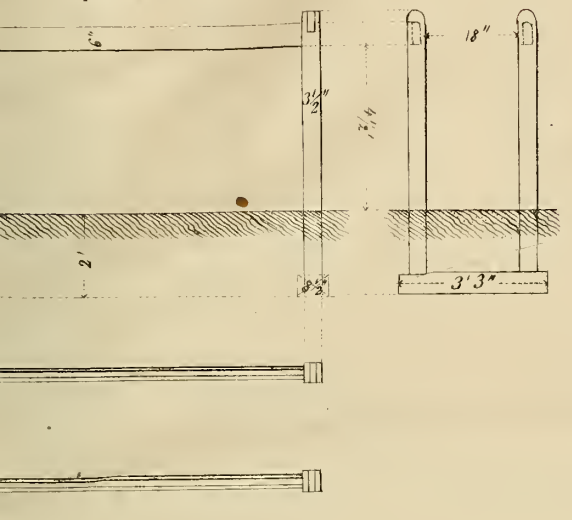
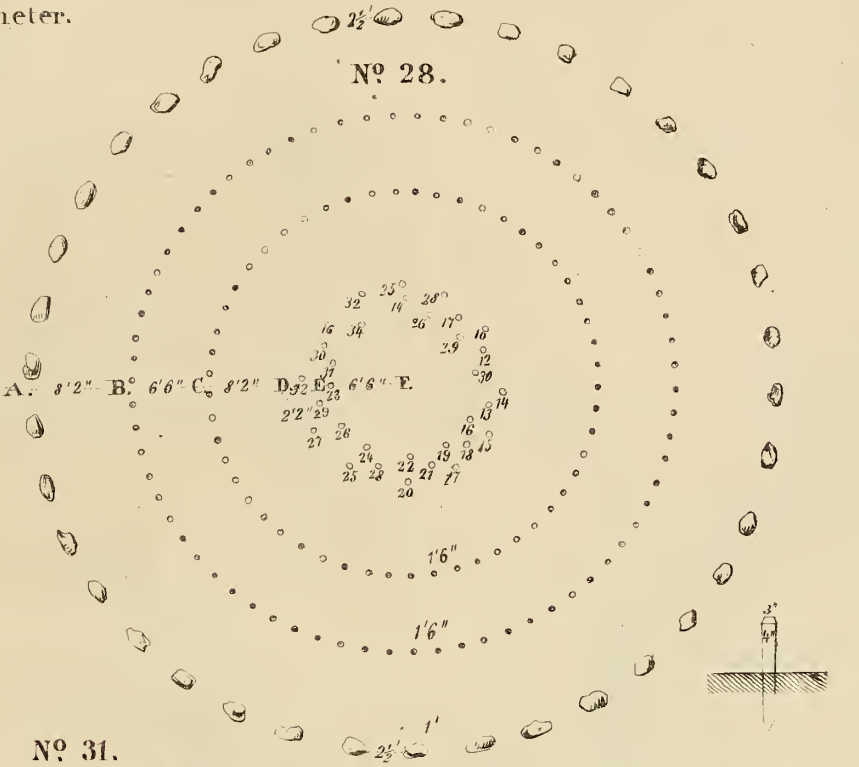
A.
Dynamo meter.

Nº 30.

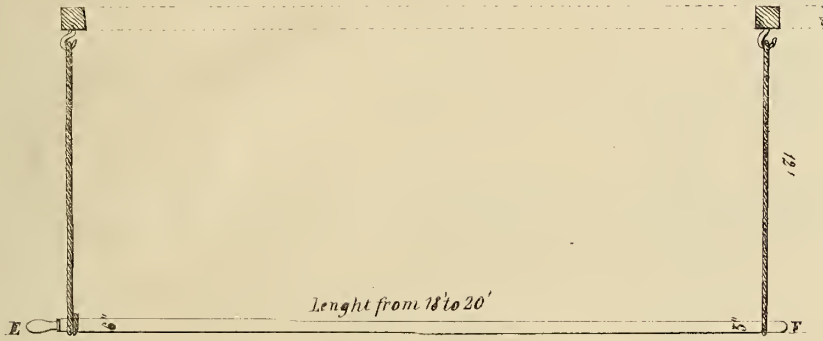
Nº 27.
Fixed parallel Bars.

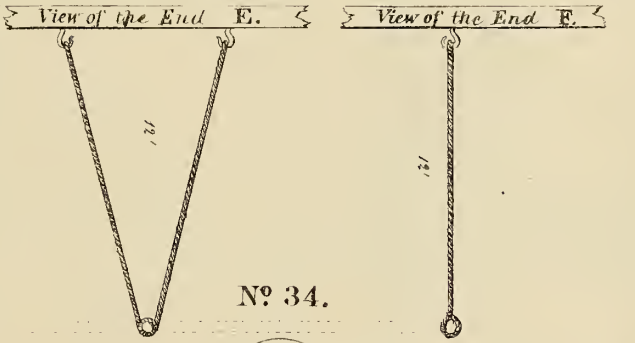


Nº 28.



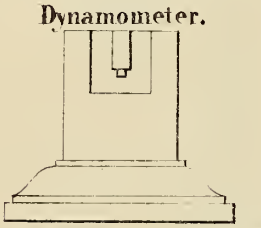
Nº 31.



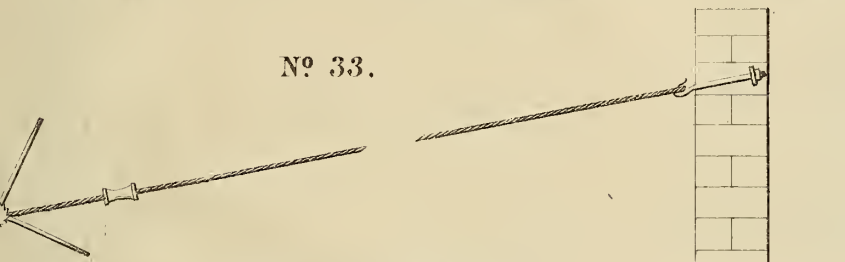


Nº 34.

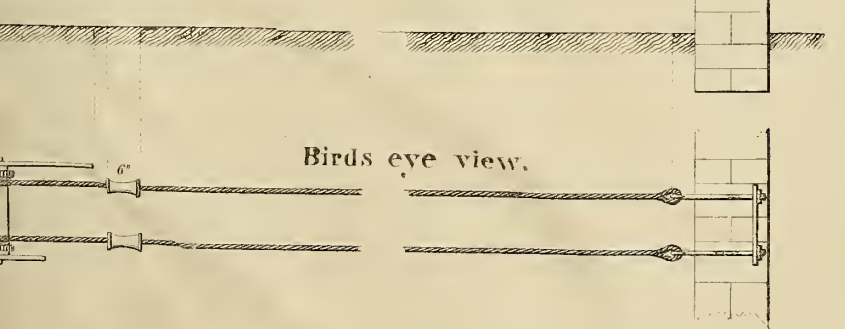
Dynamometer.



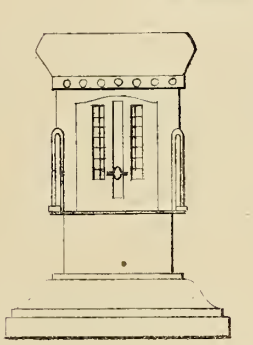
Nº 33.

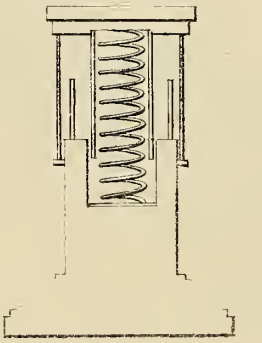


Inclined parallel Ropes.



Birds eye view.





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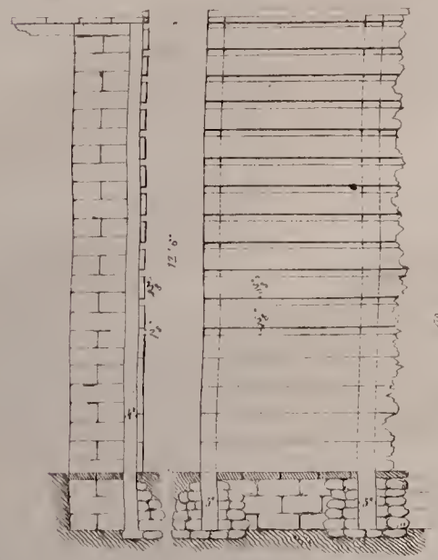
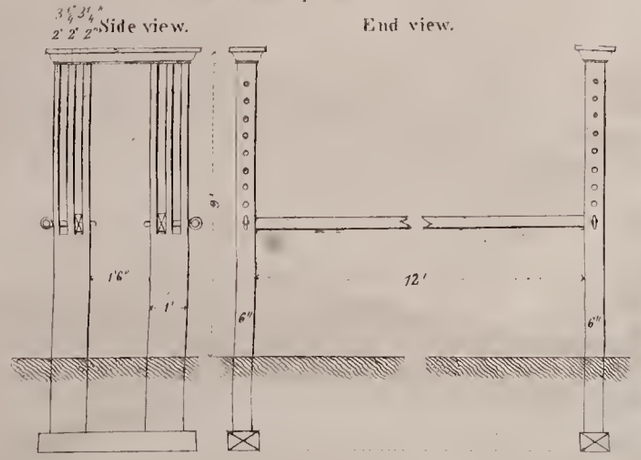
Nº 25.
Grooved boards

Side view. Front view.

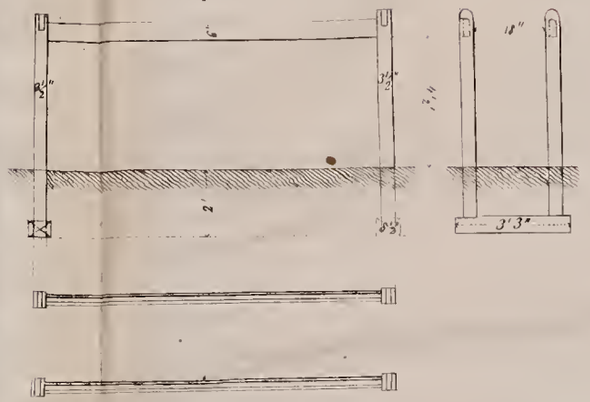


Nº 26.
Moveable parallel bars.

Side view. End view.



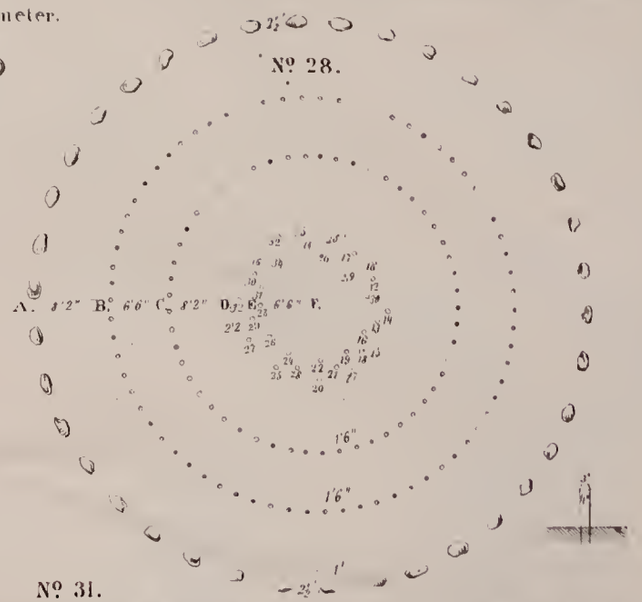
Nº 27.
Fixed parallel Bars.



Dynamo A meter.

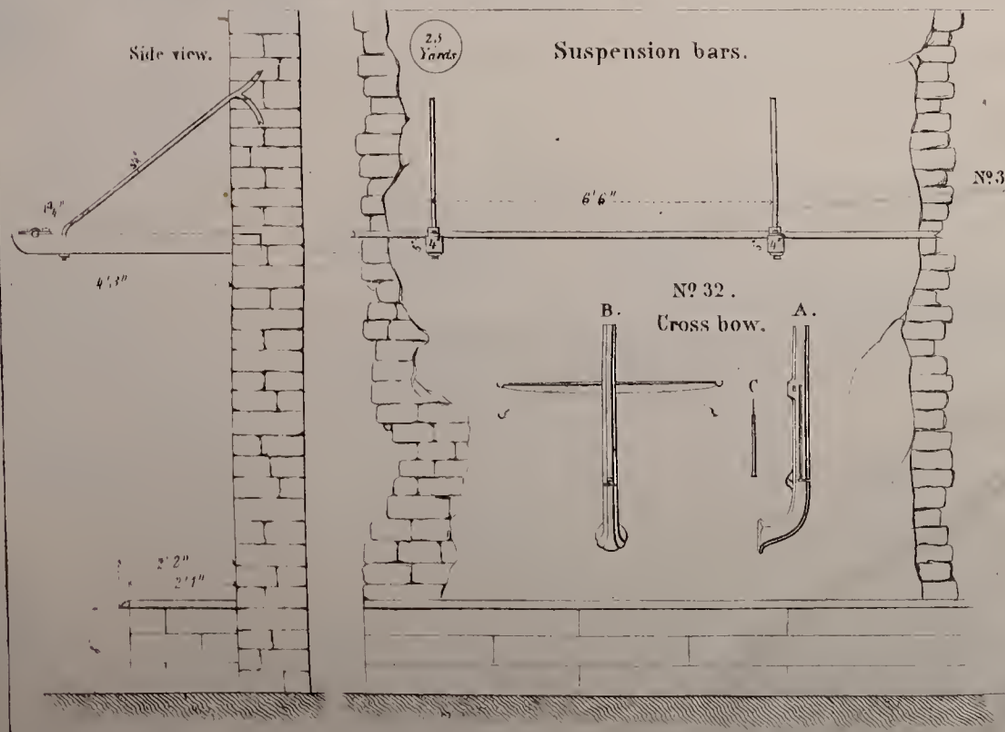
Nº 30.

Nº 28.

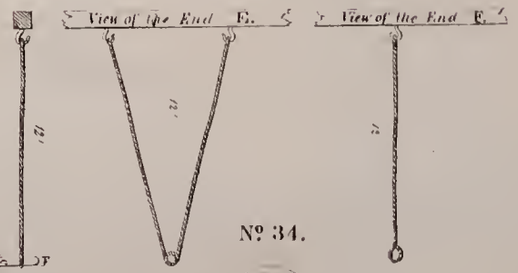


Nº 29.

Suspension bars.

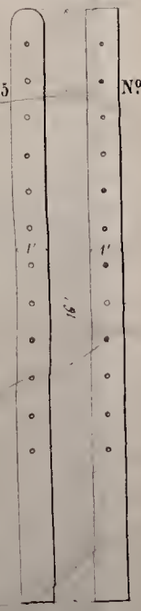


Nº 31.

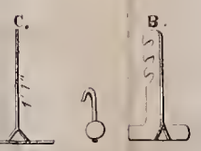


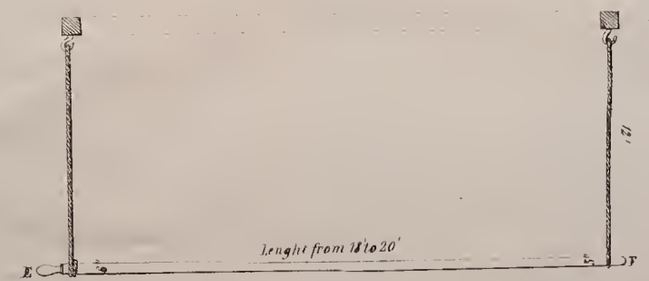
Nº 32.
Cross bow.

Nº 35



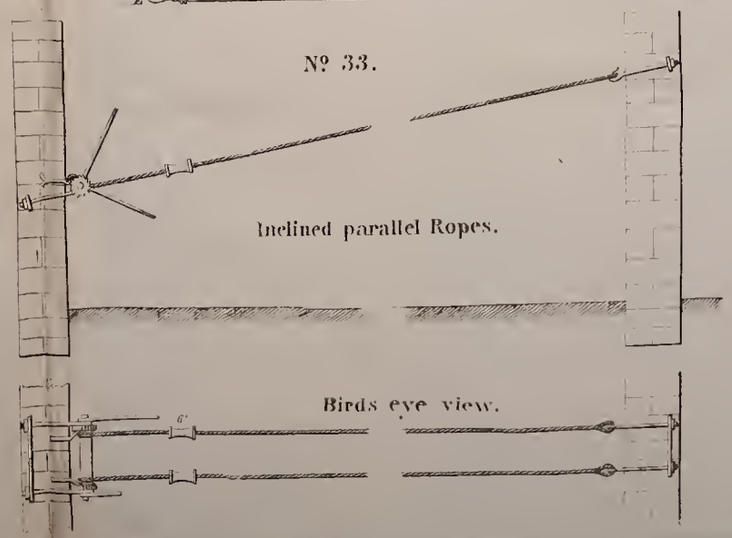
Nº 36.





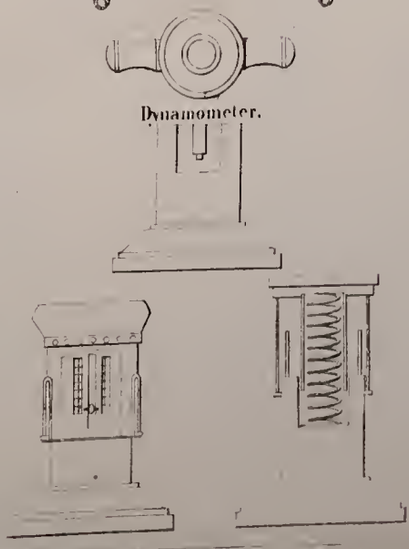
Nº 33.

Inclined parallel Ropes.



Nº 34.

Dynamometer.



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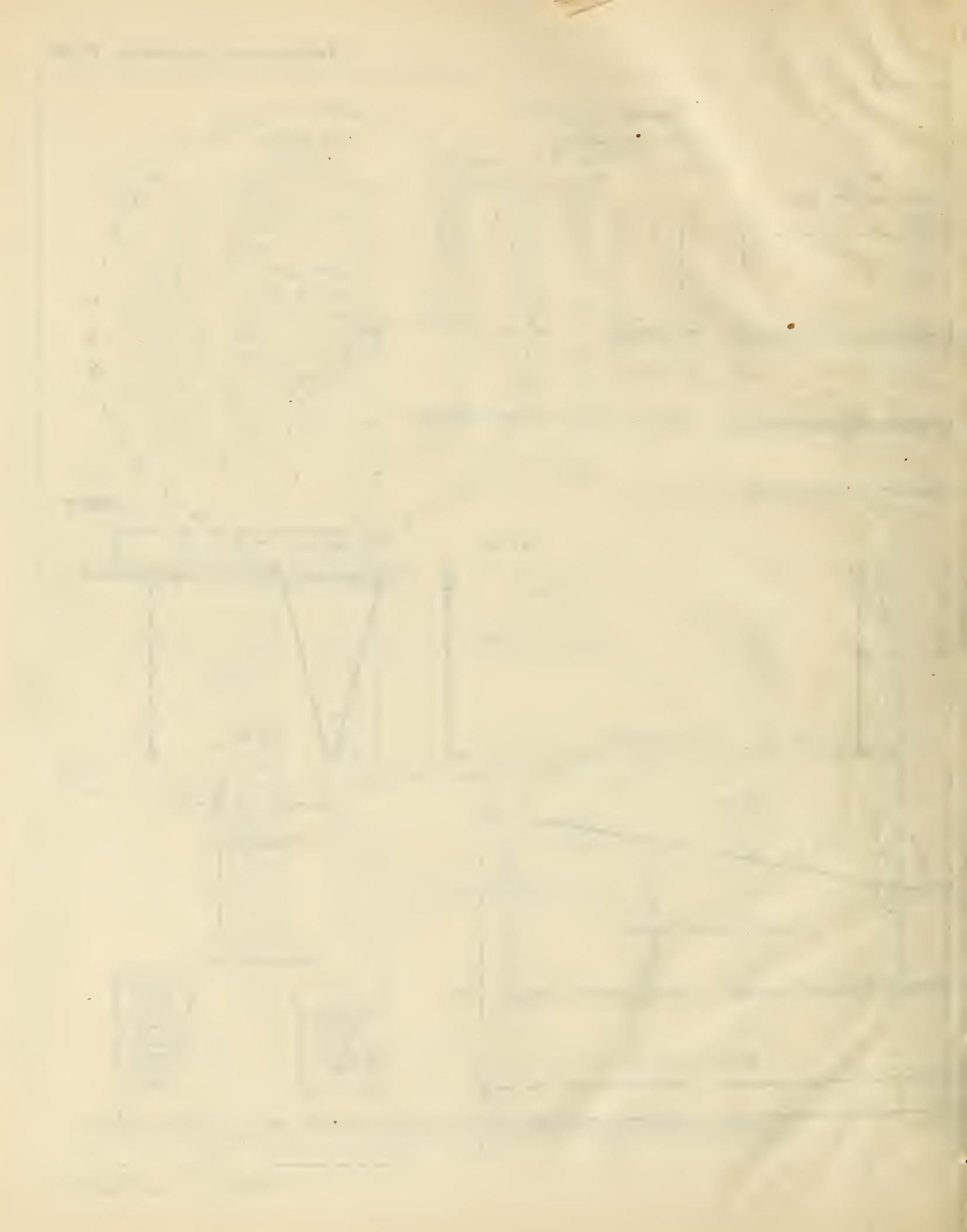
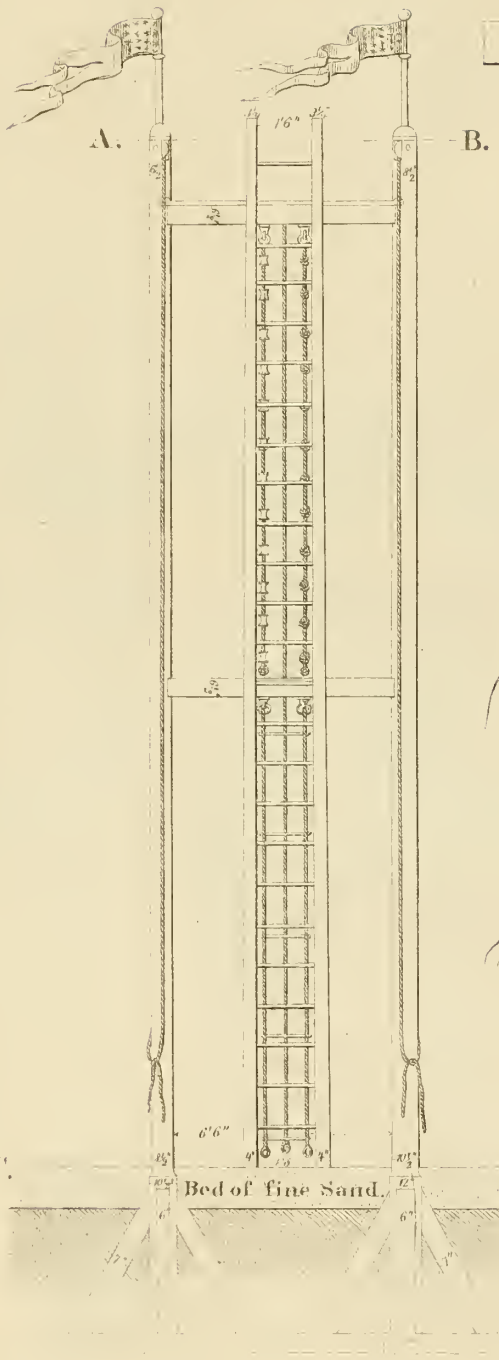
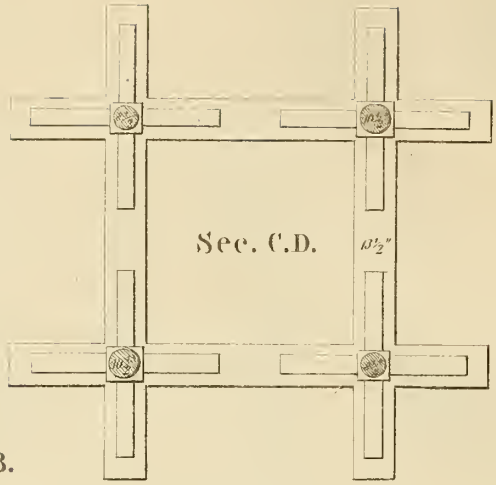
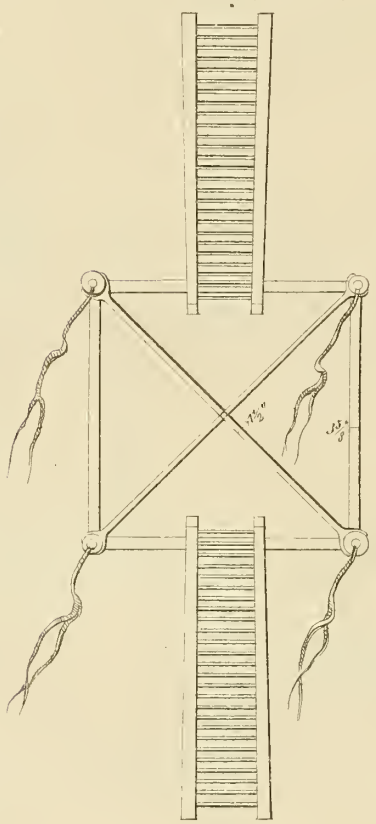


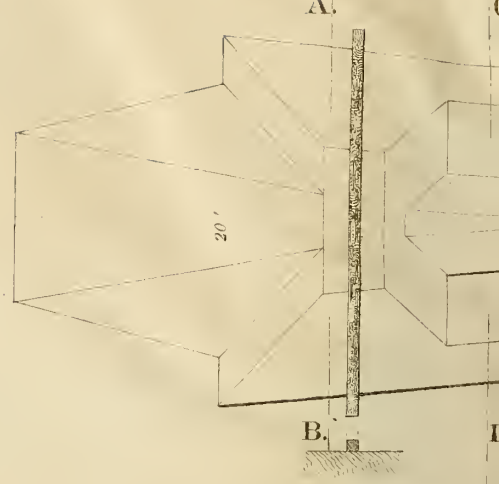
Masts
№ 37.

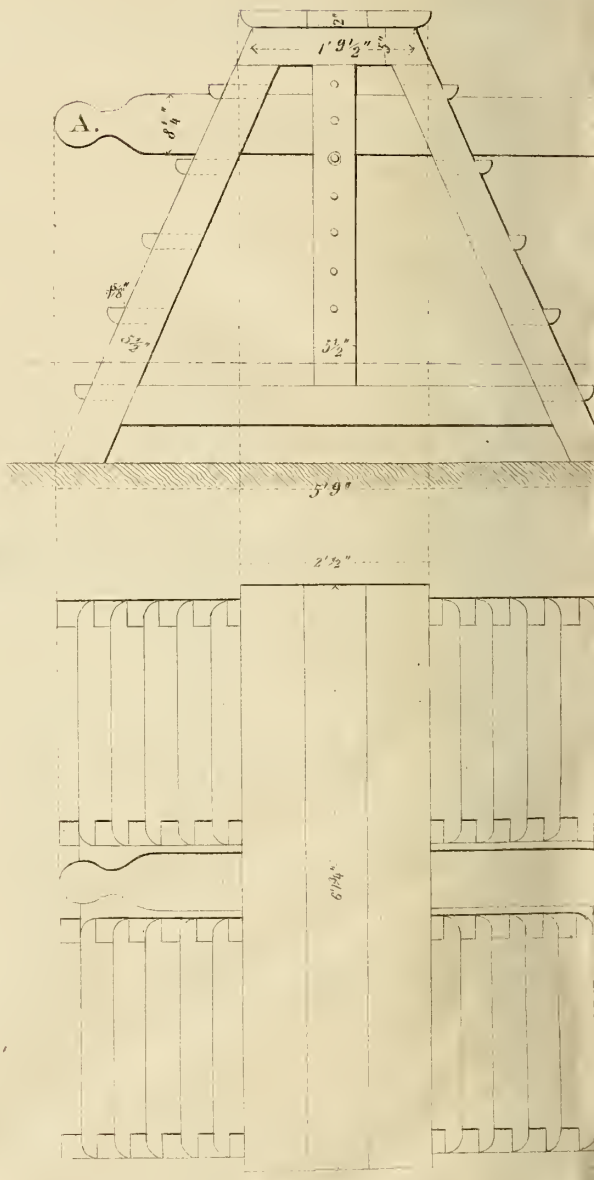




Birds eye view.







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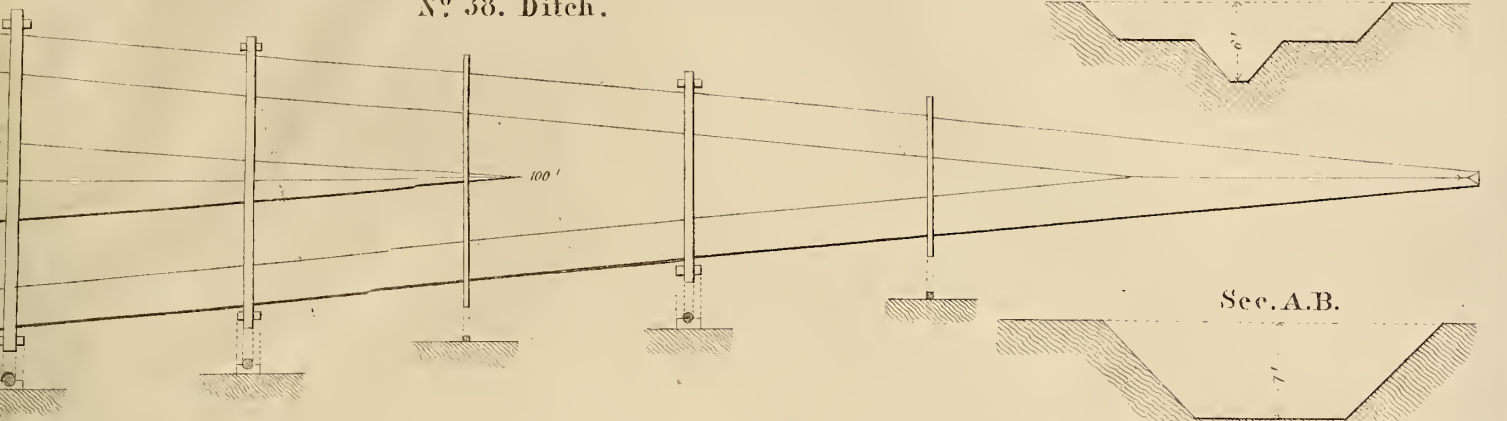
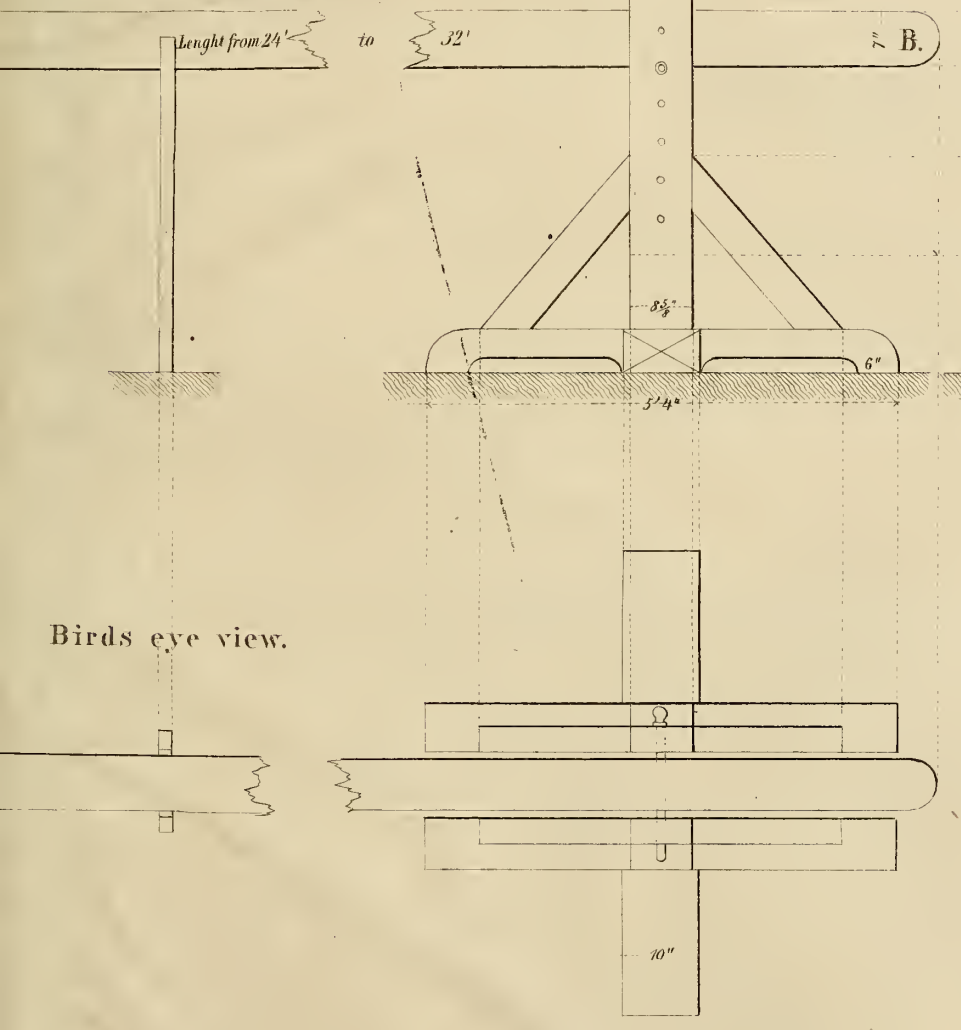
Nº 38. Ditch.



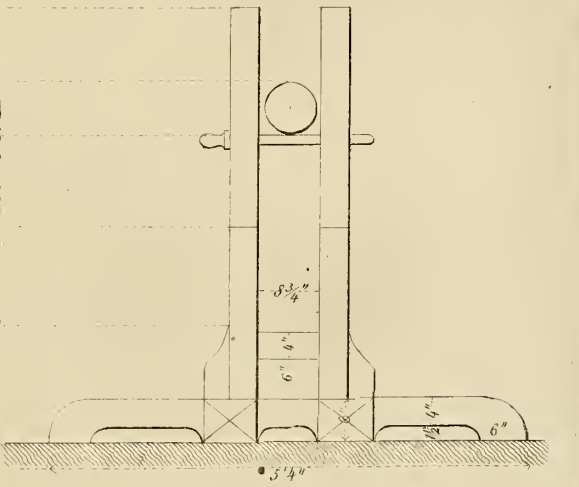
Sec. C.D.

Sec. A.B.

Nº 39. Horizontal Spar.

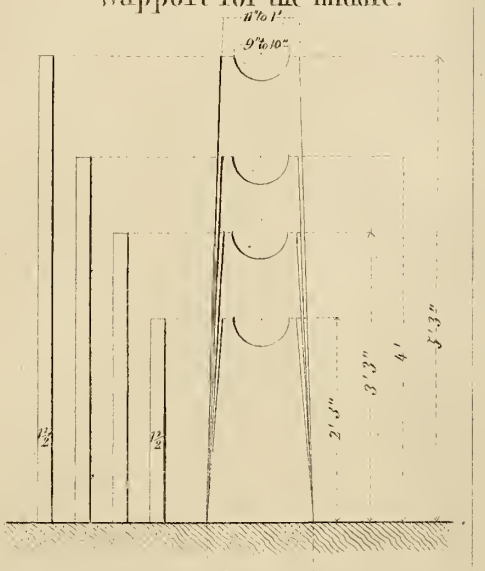


End view B.



Birds eye view.

Support for the middle.



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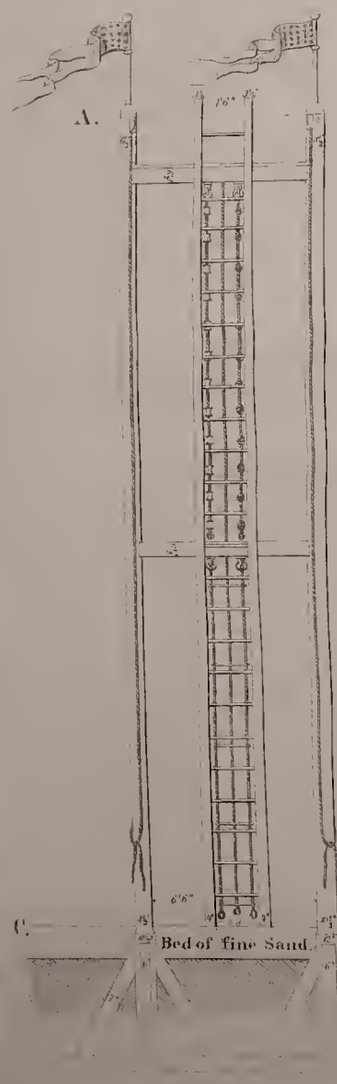
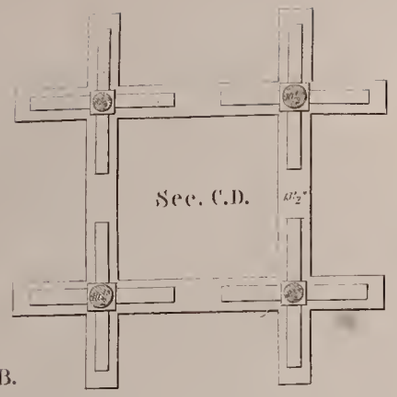
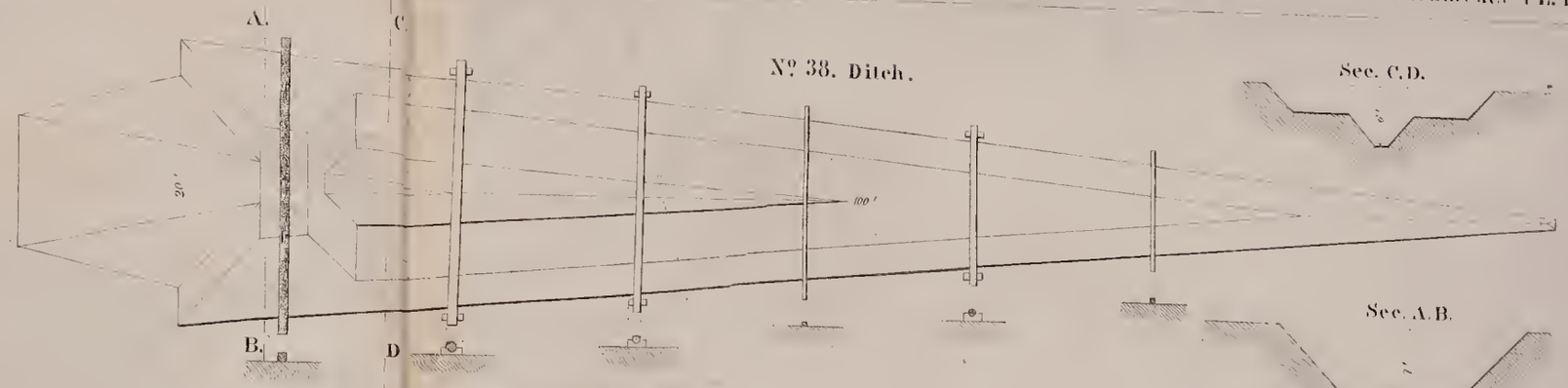
Masts
Nº 37.



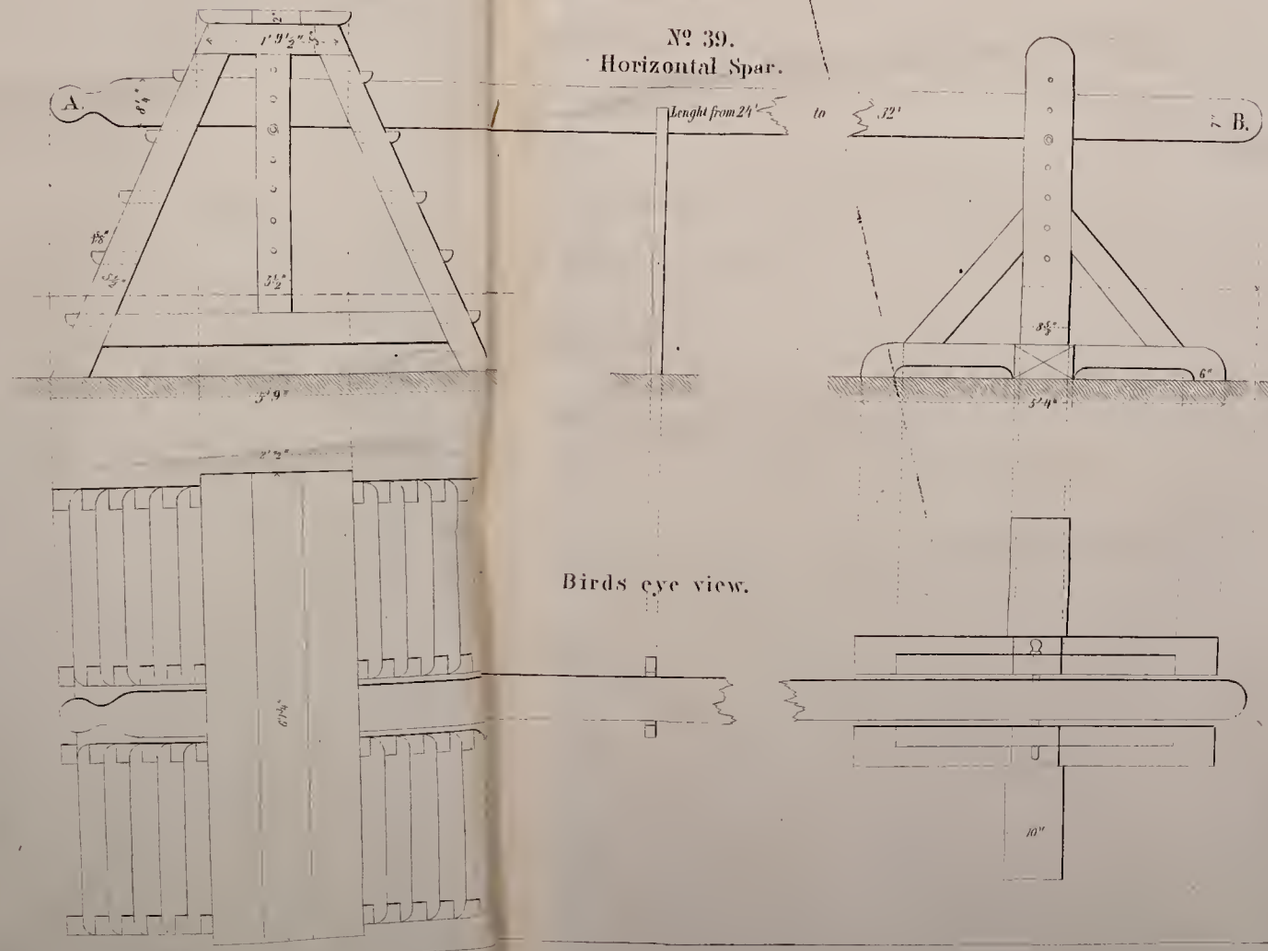


Birds eye view.

Nº 38. Ditch.

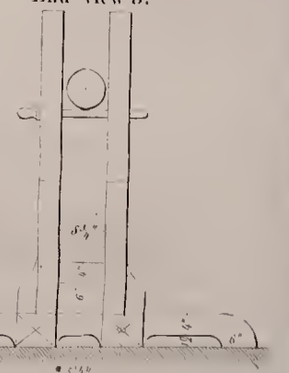


Nº 39.
Horizontal Spar.

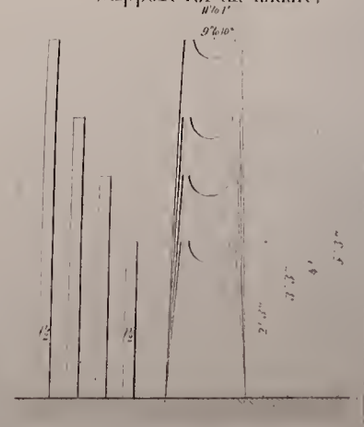


Birds eye view.

End view B.



Support for the middle.



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